

MARINE REVIEW

VOL. XIX.

Published every Thursday at 418-19 Perry-Payne Bldg., by the Marine Review Pub. Co.

CLEVELAND, O., JUNE 15, 1899.

Entered at Cleveland Postoffice as second class matter.

No. 24

AT WORK ON ALL NEW NAVAL VESSELS.

According to the report of the bureau of construction, navy department, detailing ship building operations to June 1, work has been started on all naval vessels for which contracts have been let with the exception of one battleship and one monitor. Two torpedo boats, the Dahlgren and the T. A. M. Craven, both under construction at the Bath Iron Works, are nearly ready for service, the Dahlgren within 3 per cent. and the Craven within 6 per cent. The sailing ship Chesapeake, also at the Bath works, intended as a practice vessel for naval cadets, lacks only 10 per cent. of completion, and the submarine torpedo boat Plunger, on the stocks at the Columbian Iron Works, requires only 15 per cent. more work. The sheathed cruiser Albany, purchased from Brazil in England just before the war with Spain began, still lacks 20 per cent. of completion at the Armstrong yards, Newcastle-on-Tyne. Work has started on the big 18-knot battleships Maine and Ohio, respectively, at the yards of Cramp & Sons, Philadelphia, and at the Union Iron Works, San Francisco. The Maine shows 6 per cent. and the Ohio 5 per cent. of work. Their sister, the Missouri, at Newport News, Va., is the only battleship for which a contract has been let that is not under way. The Kearsarge lacks only 9 per cent. of completion, while her sister, the Kentucky, is 2 per cent. behind. Both these vessels are at Newport News, where the Illinois shows 65 per cent. of work. Eighty-five per cent. of work has been done on the Alabama at Cramps, and 70 per cent. on the Wisconsin at the Union Iron Works. Six, 7 and 8 per cent. of work done are the records of the monitors Connecticut, Florida and Wyoming, respectively, being constructed in the order named by the Bath Iron Works, Lewis Nixon of Elizabeth, N. J., and the Union Iron Works. Work has not been started as yet on the monitor Alabama at Newport News.

ENORMOUS MOVEMENT OF IRON ORE.

As against an average movement of about 2,200,000 gross tons of ore per month from the Lake Superior district during the summer season in the past three or four years, the June movement this year will probably approach the 3,000,000-ton mark. This statement is in itself sufficient to indicate the enormous capacity of the lake fleet when put to the limit of power. June will be the banner month in the ore-carrying trade. With all interests united in the effort to give vessels despatch and thus secure the greatest possible output, the increase in the capacity of the ships moving more cargoes, and in the case of the big vessels much larger loads, is certainly wonderful. When it was announced, a few days ago, that the output of ore to June 1 (in round numbers, 2,120,000 gross tons) was practically equal to shipments up to the same date a year ago, the full significance of such a report from the mines was not understood. On account of the late opening of navigation this ore was all moved in May, and it represents almost double the average May output of the past four years. But there is no falling off in the demand for ships even with rates ruling 25 per cent. higher than the figures at which the great bulk of the business was covered by freight contracts when ore was sold early in the year at low prices. Within the past few days shippers of soft coal have marked up rates to a basis of 45 cents for the principal Lake Michigan ports and 35 cents to the head of Lake Superior, but their coal is still moving very slowly on account of so many ships continuing the policy of going up the lakes light for ore and grain.

SUPERINTENDENT OF NEW YORK SHIP BUILDING CO.

Capt. William G. Randle has resigned command of the American liner St. Louis to accept a position with the recently organized New York Ship Building Co. Capt. Randle, who has been connected with the International Navigation Co. for about twenty-five years, has had a varied experience. He superintended the construction of the Rhynland at the Barrow Ship Building Co.'s works and the Westernland and Noordland at Laird's plant at Birkenhead. In 1887 he went to the Clydebank yards to fit out the Paris, and superintended the construction of the Friesland at the same place. Then came the supervision of the fitting out of the St. Paul and St. Louis at the works of the Cramps in this country, and the captain remained with the former vessel from the time she went into commission, including the interval during the Spanish-American war when the St. Paul was in the service of the United States as an auxiliary cruiser. Capt. Randle's position with Henry G. Morse's new ship building corporation will be that of superintendent captain. Upon his retirement from the service of the International Navigation Co. he received a very complimentary letter of appreciation from President Clement A. Griscom.

WATER TUBE BOILERS IN 500-FOOT LAKE CARRIERS.

Vice-President W. D. Hoxie and other officials of the Babcock & Wilcox Co., are undoubtedly highly pleased to have secured orders for water tube-boilers for the four 500-foot steamers that are to be built by the American Ship Building Co. for a syndicate represented by Mr. A. B. Wolvin of Duluth. It is certainly quite an endorsement for the Babcock & Wilcox boilers that they should be again adopted for these very large steamers, even after the consolidation of the ship yards of the great lakes with several large boiler shops at their command, in which cylindrical boilers could readily be built. It would seem to mean that after five years of continuous work in several vessels of the Zenith Transit Co.'s fleet, controlled by Mr. Wolvin, this type of boiler has been found to possess sufficient advantages for the big freight carriers to warrant its adoption at a considerable increase in cost over the cylindrical boiler and to the disadvantage of the ship builders, who have large investments in boiler shops connected with their works.

In new ships of the navy there will be nothing but water-tube boilers in the future. Engineer-in-Chief Melville said not long ago that if the battle of Santiago taught nothing else, it certainly made very clear the ab-

solute necessity of water-tube boilers for our modern war vessels. The engineer-in-chief was referring to a paper on water-tube boilers contributed recently to the Journal of the American Society of Naval Engineers by Passed-Assistant Engineer J. K. Robison. This paper proves quite conclusively that the entire force of the navy has been of the same opinion as the engineer-in-chief since the recent war with Spain. Mr. Robison's paper was quite generally discussed by engineers prominent in the manufacture of boilers, among them Mr. W. D. Hoxie of the Babcock & Wilcox Co., who said:

"Mr. Robison does not refer to the use of water-tube boilers in the merchant marine, but all that he says regarding their advantage for ships of war holds good for ships of the carrying trade. Every year adds many converts to the already long list of ship owners using water tube boilers, and there is no better proof of their entire satisfaction than is evidenced by the frequent replacement of cylindrical boilers with those of the water tube type. Especially is this true on the great lakes, where competition is exceedingly active, and where a ton of freight is carried cheaper than on any other body of water in the world. Space and weight are saved for the same horse power developed, a higher steam pressure is carried with safety, the steam consumption of the engine is thereby materially reduced and greater economy obtained.

"If properly constructed of straight tubes that can be purchased in the market, with tube ends that are accessible, the cleaning of the boilers, both inside and out, may be thoroughly and quickly performed. Generally, such a boiler can be repaired by the ship's staff without calling for the assistance of boiler makers and the use of shop tools. A few new tubes and the water tube boiler is as good as new. There are no furnaces, crown sheets or combustion-chamber plates to drop and bulge, from whatever cause. After the recent war with Spain, it was found necessary to renew the furnaces of the battleship Indiana, requiring the services of not only the New York yard, with its gang of boiler makers, but the furnaces had to be corrugated in a particular shop. All this detained the ship at the yard for four months. Had the Indiana been equipped with say ten water tube boilers of the straight-tube type, the tubes being expanded into place with ends accessible, the first three rows over the fire might have been removed and replaced, whether blistered, burned or bent from salt and oil in the feed, or from any other cause, and repairs made entirely by the ship's talent in not more than three weeks' time.

"One of the largest firms shipping ore from Lake Superior equipped a year ago a new 6,000-ton freighter with water tube boilers, and when asked what they considered one of the greatest advantages attained by the use of these boilers, replied: 'We can load our vessels at the rate of a thousand tons an hour and unload them almost as quickly. This means that our stay in port is only a little over six hours. In that time we can blow a boiler down, make a joint on boiler steam piping, grind in a leaky safety valve, or renew a tube, can refill and have full steam and be ready to sail for destination as soon as the ship is loaded, and yet have no fear of straining the boilers from unequal expansion in getting steam quickly. With our old cylindrical boilers we would just about have them cooled off ready to work upon by the time the ship was loaded, and the rest of the time given up to repairs, refilling and slowly raising steam, would mean detention of the ship and loss to us.'

"Mr. Robison refers to the design of a water tube boiler but does not refer to materials of construction. There should be no more cast iron, malleable cast iron, or cast steel used in the pressure parts of a water tube boiler than is now allowed in the construction of a cylindrical boiler, which is nil. This is especially important where high-pressure steam is carried. Any of the cast metals placed under pressure are unreliable, even those that are so-called annealed, which process of annealing means the burning out of the carbon in the casting, leaving small holes that render the casting porous. The difficulty in obtaining sound steel castings is so well known that their use for pressure parts of boilers is exceedingly unwise, if not positively dangerous. The water tube boiler that is to stay in service should therefore be constructed of open-hearth, forged steel and drawn tubes, with cast metal in use only for grate bars. The most serious repairs would then consist of a new set of tubes, for tube-end connections made of forged steel cannot crack, even if the boiler were neglected and badly burned.

"There is a prevailing opinion among some designers that all water tube boilers must be constructed of material representing a minimum of weight for a maximum of heating surface. Such boilers have a service to perform, and a good one, namely, in the torpedo boat or destroyer, where the weight of boiler with water per square foot of heating surface should not exceed 12 or 13 pounds; but no water tube boilers built on these lines have been used in the merchant marine, and it is very doubtful if they will meet with lasting favor in the larger vessels of the navies, as their tubes and castings are so very light that they suffer greatly from interior and exterior corrosion, which soon renders their service questionable.

"The pendulum of opinion as to weights is swinging to its limit. It must return, and when it does it will finally come to rest at the water tube boiler, whose weight is about midway between the heavy cylindrical boiler and those of the express type. Such a boiler can go to sea without fear of breakdowns, and when called upon to steam continuously on long voyages will be found to contain sufficient metal to perform all the duties now required of the cylindrical boiler, and possess advantages already enumerated that will cause it to outstrip its old rival in the race for supremacy."

According to press dispatches from Philadelphia, negotiations between the Cramp company and Vickers Sons & Maxim of England looking to an amalgamation of interests in this country have been declared off. It is said that the English firm made a bid of \$90 a share for Cramp stock but it was declined.

MAINE SHIP YARDS.

A WELL ESTABLISHED INDUSTRY IN STEEL VESSELS IS AUGMENTED BY A RENEWAL OF OPERATIONS IN WOODEN YARDS—VESSELS BUILDING AND CONTRACTS ON HAND ALL COMBINE TO FORM A MOST FAVORABLE PROSPECT FOR THE FUTURE.

The revival in ship building at various ports on the Maine coast has now progressed to a point where permanency is well nigh assured, especially on account of the large amount of steel work under way. That this means much to the interests affected must be readily apparent, aside from the reverence of preserving traditions of the period beginning with the launch of the Virginia, almost three centuries ago, when the ship yards of the Badger state held unquestioned supremacy. The evolution from the queer shaped wooden hull of 30 tons burden to the five and six-masted schooners now building, the steam yacht Aphrodite and steel sailing ships E. M. Phelps and Arthur Sewall, turned out last year, has of course been marked by many radical innovations. There were also periods of excessive depression, one of the worst of which ended only last year. In 1890 there were completed at Maine yards vessels of an aggregate of 74,466 tons burden, but the industry gradually declined until in 1897 the total output was but 5,057 tons. Last year, however, a revival set in, the ship yards were again peopled, and the year closed with a showing of 27,295 tons. There is every indication that 1899 will place the state on its old footing as a ship building center, if it does not indeed enable it to attain a still higher place.

The port of Bath and vicinity easily holds first place as a ship building point, not only in Maine but throughout New England. This will be appreciated when it is stated that of the total of 27,295 tons put into the water during 1898, 24,734 tons were launched from Bath yards. Seemingly the construction of every class of vessel increased. Nineteen barges were completed during the year, while the end of the year found quite a few unfinished on the stocks, with the number of new orders thus far in the present year much heavier than in any like period of the past. Arthur Sewall & Co.'s steel sailing ships, the Erskine M. Phelps of 2,715 tons, and the Arthur Sewall of 2,919 tons, of course served to bring up the aggregate considerably. The Winifred, the first American "tramp" steamer (built for Miller, Bull & Knowlton of New York) was interesting in its way. The development of the wooden schooner continued. The five-masted Nathaniel T. Palmer built by N. T. Palmer of Bath, Me., has a net tonnage of 2,244 tons, thus exceeding by more than 550 tons the Governor Ames, which up to the time of the launch of the Palmer was the only five masted schooner turned out at a Maine yard.

Favorable conditions created in 1898 have been emphasized in 1899. Almost every yard on the entire Maine coast is crowded with work and several yards that have been closed for a number of years have been reopened, with a fair number of commissions on the order books. Builders of wooden vessels are engaged chiefly upon barges and schooners, among the latter being the six-master which H. M. Bean of Camden is building for Capt. J. G. Crowley of Taunton, Mass.—the first vessel of the kind ever projected. Sewall & Co. are building steel sailing ships and barks, while the Bath Iron Works is engaged on torpedo boats, a monitor, the practice vessel Chesapeake and a yacht for a New York gentleman.

Among the best equipped yards at Bath is that of the New England Co., which has succeeded to the ship building business conducted successively by the New England Ship Building Co., Goss & Sawyer and Goss, Sawyer & Packard. The company's yard as at present laid out has sufficient ways for the simultaneous construction of eight or ten vessels, and extends for some distance along the Kennebec river, affording an excellent deep water front. The yard embraces a good-sized marine railway, two steam mills fitted with modern machinery for molding timbers and vessel work of all kinds, galvanizing and blacksmith shops, rigging and mold lofts. The presidency of the New England Co. is held by Galen C. Moses, and he is ably assisted in the active management by Treasurer Isaiah S. Coombs. The concern has an enviable record. More than 100 vessels are hauled out on its marine railway each year, and during the forty years embraced in the life of the company 275 vessels have been turned out. Among this fleet were 143 schooners, seven brigs, thirty-five barks, twenty-six ships, twenty-seven steamers, seven steam barks, four steam schooners, eleven barges and a tug.

A short time ago the Review presented a full sketch of the Bath Iron Works, and of the men who, with the co-operation and under the direction of Gen. Thomas W. Hyde, have been responsible for the success achieved at these works.

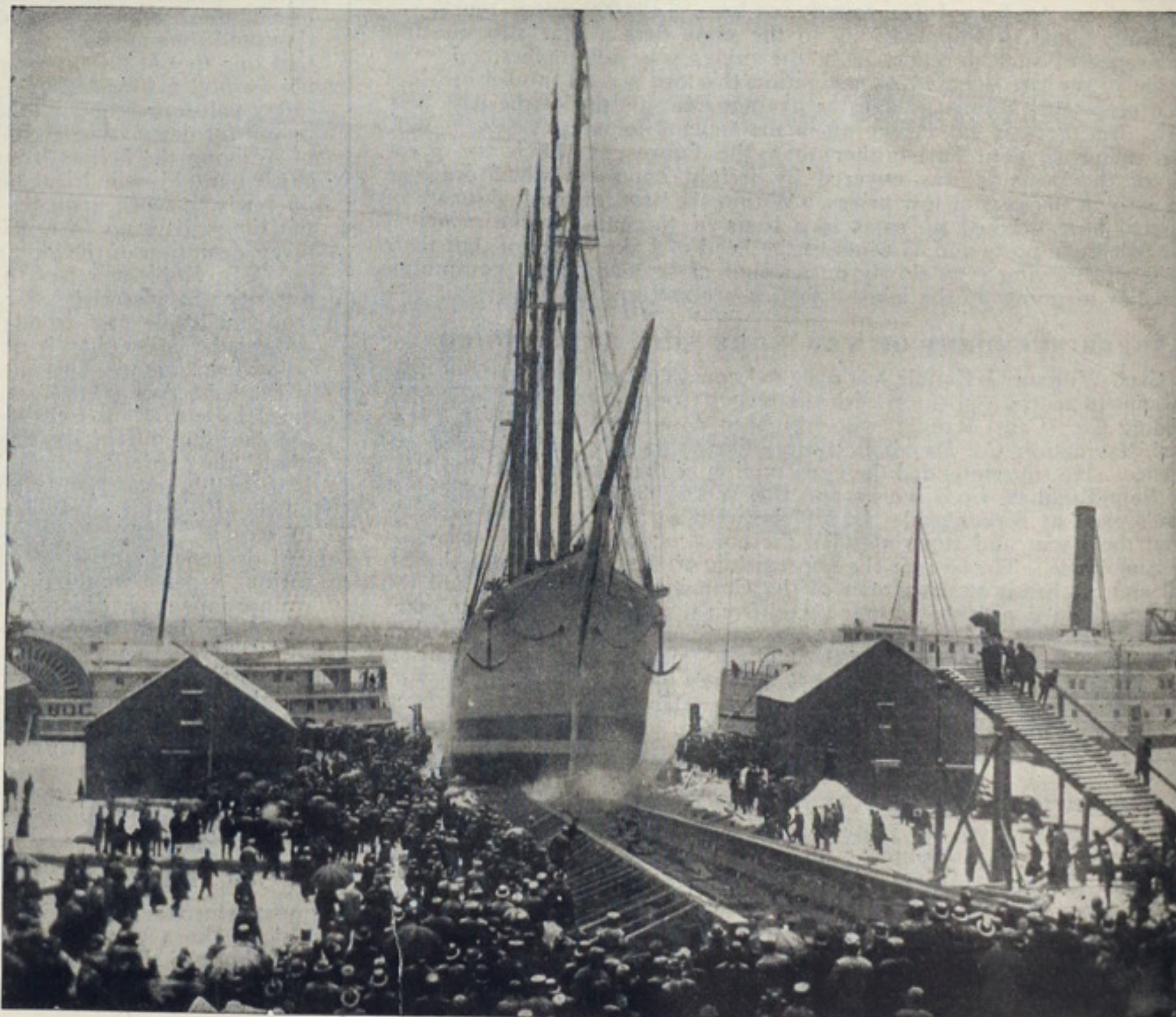
It is unnecessary, therefore, to add anything to the tribute which was the paid to the builders of the Machias, Castine, Katahdin, Vicksburg, Newport, Amphrodite, Chesapeake, Dahlgren, Craven, Eleanor and a host of other craft known in the merchant marine and the navy for their staunchness and efficiency. A word may be said, however, of the progress of improvements which the management of the Bath Iron Works have continued to push forward with unremitting vigor. The city of Bath some time ago condemned a considerable portion of a

street in front of the works and donated it to the company. The company then purchased the property on the other side of the street and is there erecting shops and sheds which will practically double the capacity of the plant. In addition to the \$2,500,000 worth of contracts now on hand, and the large number of naval vessels constructed, the Bath works has during the past few years turned out five vessels for the United States light-house board, three steam yachts and five passenger steamers.

The Sewalls of Bath have built only a few less than a hundred vessels since they launched the brig Diana in 1823. William D. Sewall then owned the yard, which was later transferred to E. & A. Sewall, and after continuing under that title from 1855 to 1882 passed in the latter year to the present firm of Arthur Sewall & Co. About five years ago the Sewall yard was transformed to a plant for building steel ships, and the Dirigo, the first vessel of this class which they completed, bore the distinction of being the first steel sailing vessel ever built in America. The material for the boat was imported from Glasgow. Several steel sailing vessels of from 1,800 to 2,000 tons burden have been built since and others are now under way in the yard.

The firm of Kelley, Spear & Co., although a comparatively new one, having only been organized in 1886, is composed of old experienced ship builders. Capt. John R. Kelley, senior member of the firm, has had experience both as a builder and navigator of sailing vessels; D. Howard Spear has worked at various times in his career for the older established Maine yards, and Elijah F. Sawyer has worked at ship building for more than fifty-two years. The firm of Kelley, Spear & Co. has built sixty-six vessels. About 300 men are employed at this yard which is equipped with a saw mill and the latest improved devices for handling timber easily and expeditiously.

William Rogers, president of the Bath Board of Trade, is another well-known Maine ship builder who has turned out a large number of fine vessels. The Nathaniel T. Palmer, pioneer five-masted schooner, bears the name of her builder, who needless to say is progressive in methods. This big schooner is 285 feet in length by 44 feet beam and 22 feet depth. She spreads 10,000 yards of canvas. This is the sixth schooner which Mr. Palmer has built and named for some member of the family. The monster six-masted schooner to have a carrying capacity of 5,500 tons and cost \$100,000, which H. M. Bean of Camden is building, has already been mentioned. Percy & Small built the Alice E. Clark, the second largest Maine-built schooner in the fleet of 1898, and now have a good run of work on hand. Sawyer Bros. of Millbridge, another enterprising firm, has several vessels under way, and the Portland Ship Building Co. at South Portland is working its plant to full capacity. Connected with the Portland company's yard is a marine railway capable of hauling out vessels of 1,300 tons. This company built several steamers for the Casco Bay Co. and rather makes a specialty of steamers for service in bays and harbors.



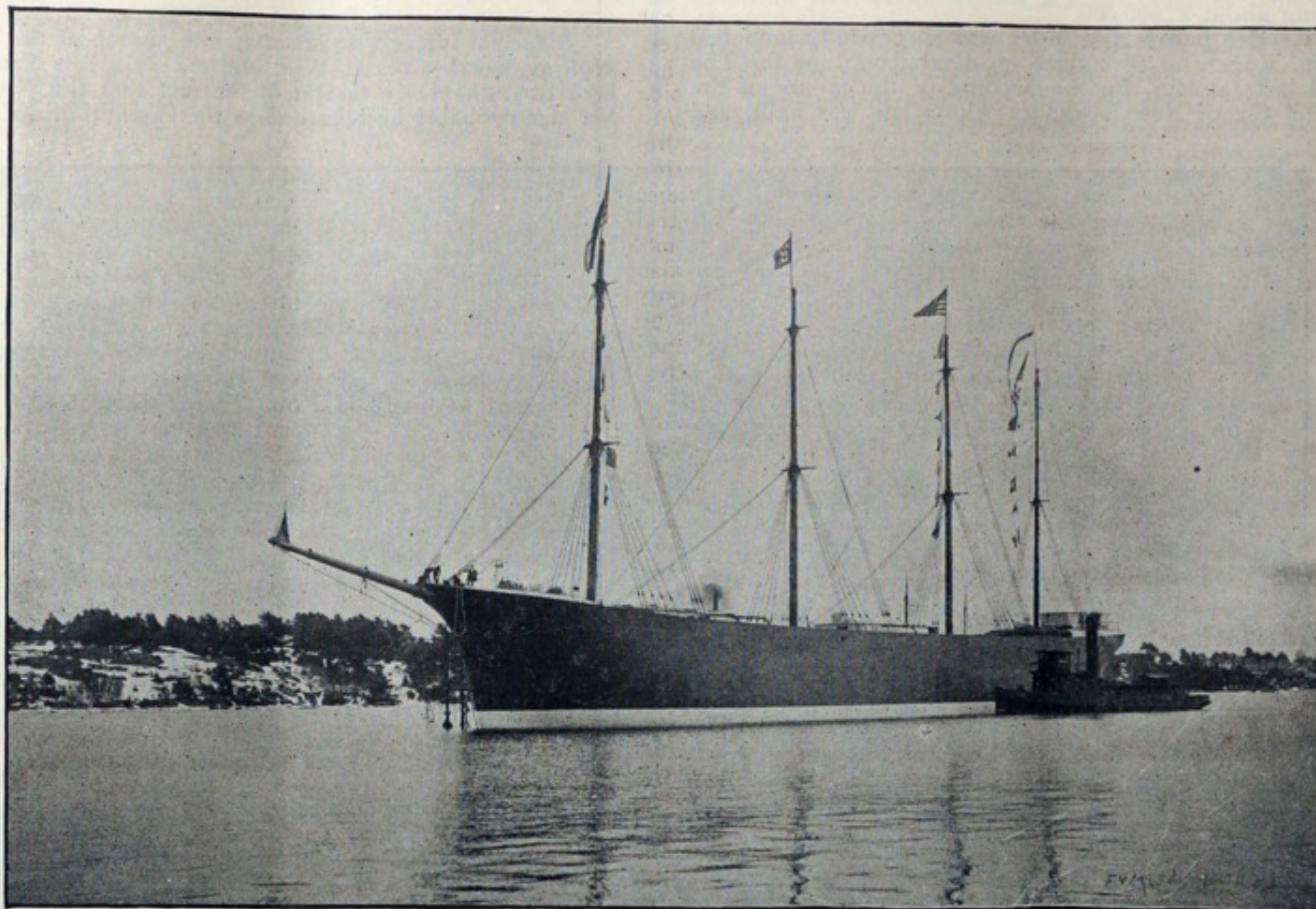
LAUNCH OF THE PIONEER FIVE-MASTED SCHOONER NATHANIEL T. PALMER AT THE YARD OF N. T. PALMER, BATH, ME.

It would be manifestly an omission to conclude any mention of Maine ship yards without according notice to the Hyde Windlass Co., a corporation directed by the influential men of the Bath Iron Works, and which, by reason of the merits of its product, is known almost as widely as the parent concern itself. The original business of the Bath Iron Works was the manufacture of windlasses and other appliances for vessels, and this is now carried on by an organization incorporated in

1897 as the Hyde Windlass Co. J. S. Hyde is president, E. W. Hyde, treasurer, and J. R. Andrews, manager. The plant is situated only about an eighth of a mile from the yard of the Bath Iron Works, and includes a machine shop 300 feet long by 80 feet wide, a pattern shop 40 by 50 feet, a pattern store house 130 by 40 feet, an office building and other struc-

NEW COAL PIER.

The coal piers of the Reading railroad at Port Richmond, near Philadelphia, have been greatly enlarged and improved during the past winter. One of the provisions which has materially increased the facilities for coal shipment was the construction of what is probably the largest

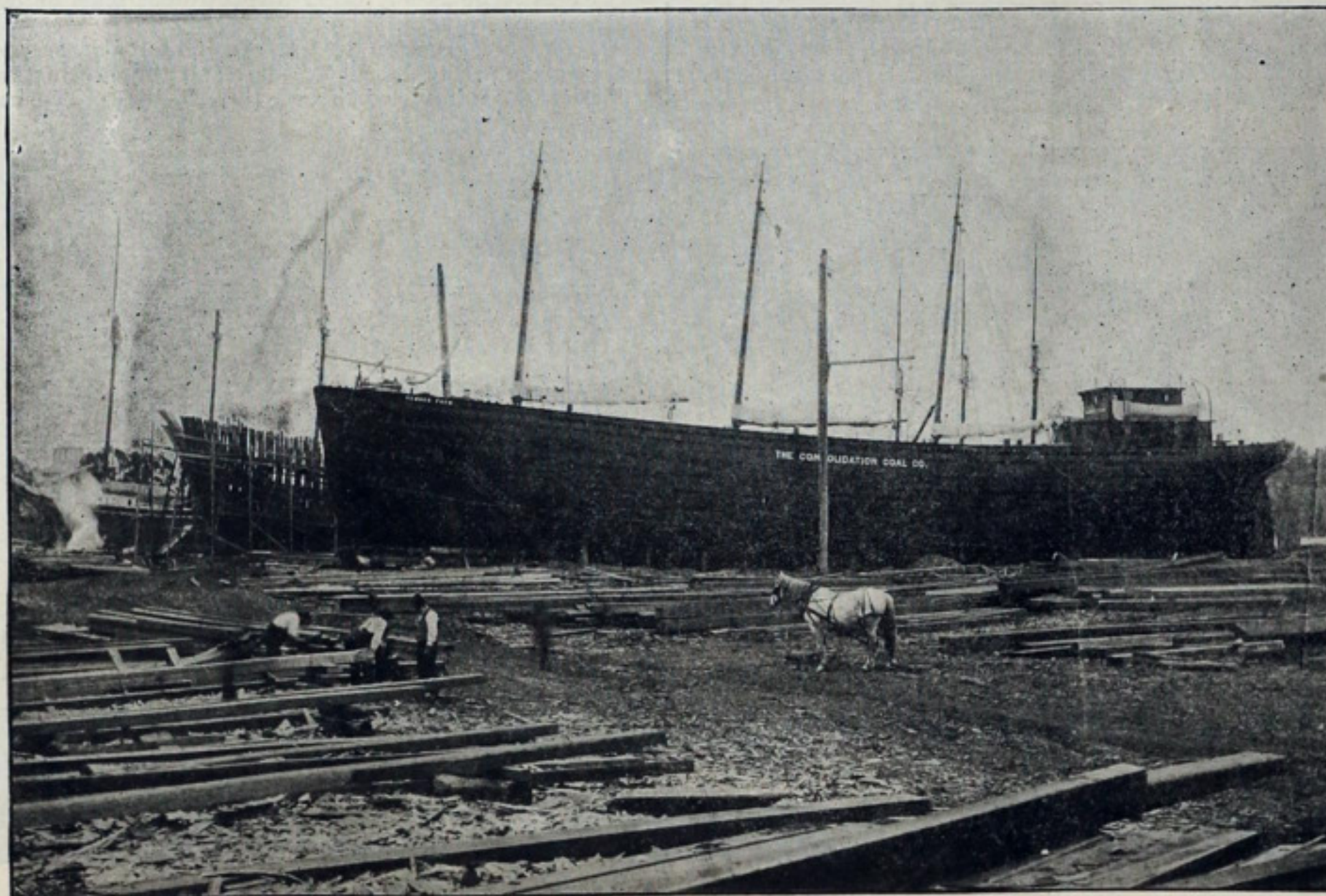


STEEL SAILING SHIP, ARTHUR SEWALL, BUILT BY ARTHUR SEWALL & CO., BATH, ME.

tures. The foundry is one of the best in New England and turns out also a large amount of the Hyde manganese bronze. The Hyde plant gives employment to about 200 men.

It is interesting to note too that the Maine yards last year far surpassed in the matter of output the yards in Massachusetts and Connecticut combined, although included among the builders in the latter states

coal pier of the kind in the country. It is 770 feet in length, 61 feet wide and 44 feet high above mean mud tide. The docks on either side have been dredged to a depth of 26 feet at mean low water, to accommodate any craft that may enter the port. The approach to the piers, which is 1,150 feet in length, is an earth-fill, and with the pier is built on a 1¼ per cent grade. The cars, after being emptied, are run by gravity from



GENERAL VIEW OF THE NEW ENGLAND CO.'S SHIP YARD AT BATH, ME.

are such firms as James & Tarr and A. D. Story of Essex, Mass., George Lawley & Son, Corporation of Boston, Fore River Engine Works of Weymouth, Mass., and Robert Palmer & Son of Noank, Conn. The Massachusetts and Connecticut builders turned out forty-five vessels as compared with fifty-five launched at Maine yards, but the aggregate tonnage of the latter was 27,295 tons while the former footed up only 12,626 tons.

the pier to the tracks on which empty cars are stored. The pier is provided with four tracks and has four berths, two of which are provided with six chutes each, thus enabling four 1,500 ton barges or other craft to be loaded at one time. This new pier, when taken in conjunction with the other facilities at the port, enables the Reading company to ship 21,000 tons of anthracite coal in 24 hours. Track facilities of the company have also been largely increased.

NEW CONTRACT FOR BATH IRON WORKS.

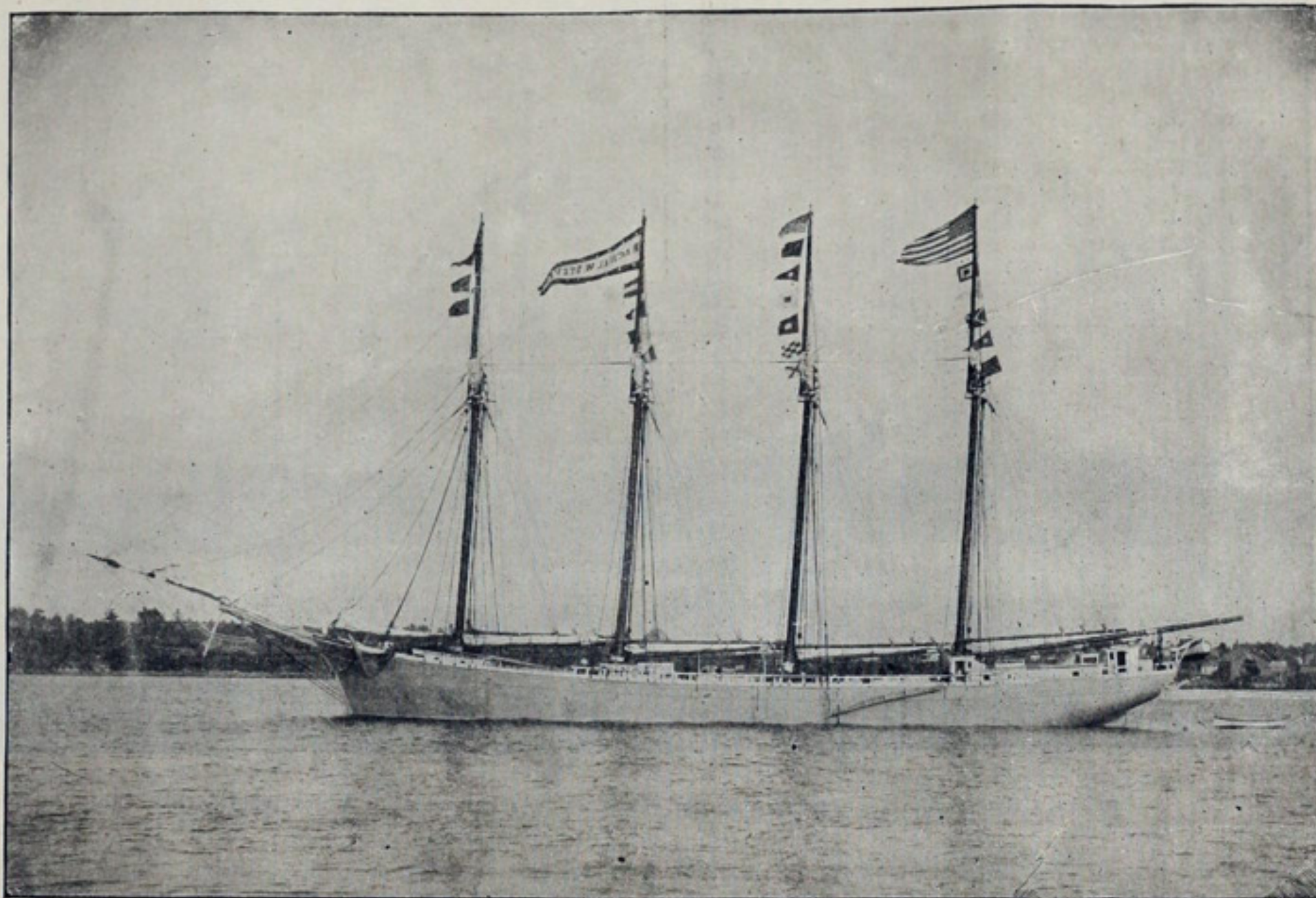
Bath, Me., June 12.—(Spl. Cor.)—The Bath Iron Works has just closed a contract with the New York, New Haven & Hartford Railroad for the construction of two powerful sea-going towboats to cost \$90,000 each. The Bath Iron Works have at the present time ten vessels under construction with an aggregate indicated horse power of 31,000, the sum of the contract price being about \$2,500,000.

The four-masted wooden barge New York was successfully launched from the yard of Wm. Rogers at this place on Thursday, June 8. The vessel was completed last January, but on account of the failure of the Atlantic Transportation Co. of New York, for whom she was built, and

LAUNCH OF THE STRINGHAM.

LARGEST TORPEDO CRAFT BUILT OR BUILDING FOR THE UNITED STATES NAVY
SLIDES INTO THE WATER AT THE YARD OF THE HARLAN & HOLLINGS-
WORTH CO., WILMINGTON, DEL.—OTHER VESSELS AT THE
WILMINGTON WORKS.

Especial interest attached to the launch at the yard of the Harlan & Hollingsworth Co., at Wilmington, Del., last Saturday, of the torpedo boat Stringham, by reason of the fact that the vessel will on account of her size probably be regarded as the flagship of the United States torpedo

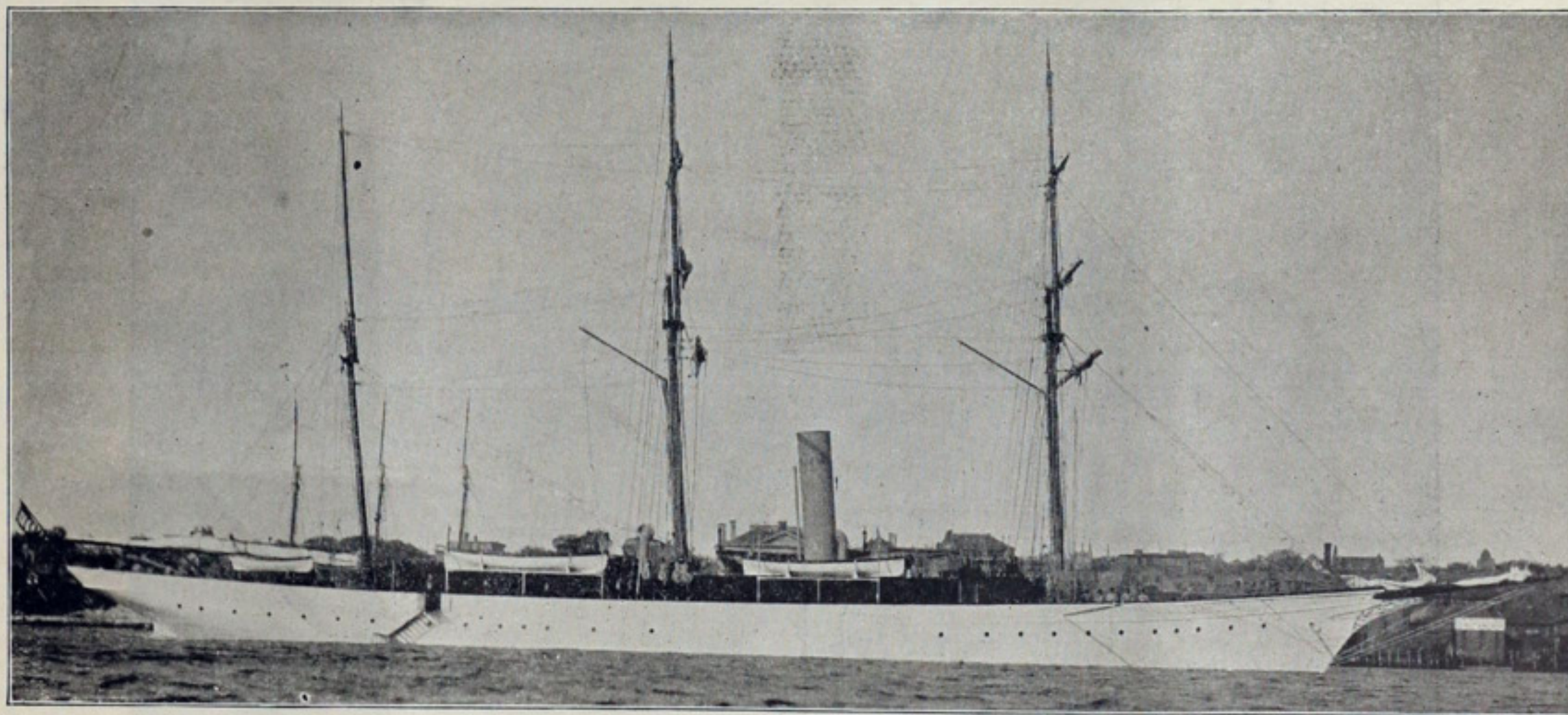


SCHOONER RACHEL W. STEVENS BUILT BY THE NEW ENGLAND CO., BATH, ME.

the question of ownership between Capt. Wm. Berse of New Bedford and the transportation company, she has been in the hands of the courts. This barge can be made ready for sea in a few days, and it is expected that some satisfactory settlement will be made so the craft can go into service very shortly. Dimensions of the New York are as follows: Length, 240 feet; beam, 44 feet; depth, 21 feet; gross tonnage, 1,688.47; net tonnage, 1,576.15. She has cost upwards of \$50,000.

boat flotilla. She is of 70 tons greater displacement than the Farragut, recently completed by the Union Iron Works, San Francisco, and fully twice as large as any other torpedo boat built or building for the United States government.

The construction of the Stringham was authorized by congress in the act approved March 3, 1897, and the contract was signed with the Harlan & Hollingsworth Co., July 29, 1897. The keel was laid March 21,



STEAM YACHT ELEANOR, BUILT BY THE BATH IRON WORKS, BATH, ME.

The Ocean Wave, a side-wheel vessel which has been operated between Puget Sound ports, has been purchased by the Santa Fe Railroad Co., and after being thoroughly overhauled and fitted with new engines will be placed on the route between San Francisco and Port Richmond.

The White Star liner Germanic, which sank at her pier in the North river, New York, last February, has sailed from Queenstown for New York on her first trip since she left for Belfast for repairs.

1898. The contract date of completion was July 29, 1899, and the price for hull and machinery, exclusive of ordnance and outfit, \$236,000. The vessel is 225 feet long, 22 feet extreme breadth, and at 6 feet 6 inches mean draft displaces 340 tons. The design in its general features follows the English type of boat, but it is not a close copy of foreign plans. There are four Thornycroft water tube boilers, exhausting into three stacks, the two middle boilers having a common stack. The engines are twin-screw, vertical inverted, triple expansion, designed to indicate 7,200 horse power, which is expected to drive the boat at least at the guaranteed speed of 30

knots. Her allowance of coal at normal draught is 35 tons. Her bunkers will stow 120 tons.

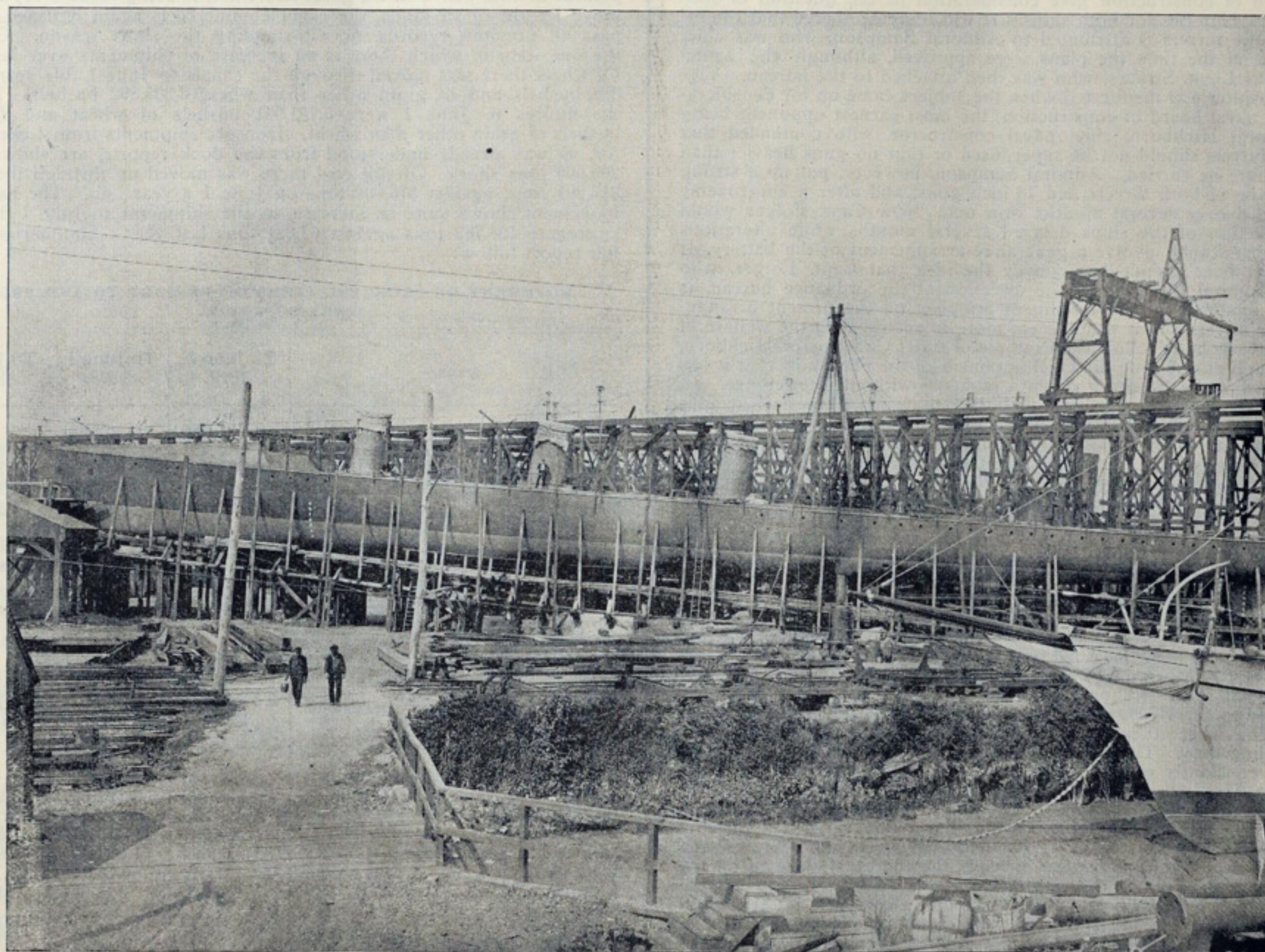
The Stringham carries an unusually heavy battery for a boat of her class, as in addition to two deck discharging tubes for 18-inch Whitehead torpedoes, she mounts seven 6-pounder rapid-fire guns, one on top of each of the two conning towers, and the other five on the deck between the conning towers. Officers' quarters aft consist of a cabin and state room for the captain, a state room each for the executive officer and engineer, and a mess room, abaft which is a pantry and bath room. Forward of the captain's quarters is a compartment with four berths for petty officers and one with six berths for machinists. Forward of these is the firemen's quarters with twelve berths. Forward of the firemen's quarters is the engine room, occupying the full width of the boat for 28 feet, and then comes the boiler compartments and coal bunkers, which absorb 73 feet of the length of the boat. Forward of the boilers is the galley and then the crew's quarters, with twenty folding berths, and in the extreme bow the windlass compartment. A turtle back is built from the forward conning tower to the stern, and the latter has a sharp rake instead of being plumb as usual. The speed trial of this vessel, which is about 80 per cent. completed, will be made as soon as possible, and after completion and acceptance she will be sent to League island navy yard for commissioning. Her equipment is most complete including an outfit of pumps of the Blake "Simolex" type, made by the George F. Blake Manufacturing Co. of New York.

boilers, 14½ feet by 12 feet three inches; furnaces, each 50 inches diameter; speed, 16 knots.

Steamer Grecian for Boston & Philadelphia Steamship Co., known as the Winsor line; freight and passengers; building under the United States Standard Register rules; length over all, 290 feet; beam, 42 feet; draft, 18 feet; large freight accommodations; one hundred passengers; inverted triple expansion engine 25, 41½ and 68 inches diameter and 42 inches stroke; four boilers, 12 feet by 10½ feet; two furnaces to each boiler, 40 inches diameter; speed, 15¾ knots.

Two torpedo boat destroyers, Hopkins and Hull; 244 feet over all; beam, 23 feet 1½ inches; draft, 6 feet 6 inches; two direct-acting triple expansion engines of 23, 32½, 34 and 34 inches diameter of cylinders with 18 inches stroke, four Thornycroft boilers; manganese bronze propellers; speed, 29 knots. These boats, while they have a trifle less speed than the Stringham, have practically the same engines and are of the destroyer class, having five 5-pounders and two 12-pounders on the conning tower.

Two freight steamers for the New York & Baltimore Transportation Line; 219 feet over all, 32 feet beam, 13 feet 6 inches draft; triple expansion engines of 18, 28 and 45 inches diameter of cylinders, and 30 inches stroke; speed, 12 knots loaded; two Scotch boilers 11 feet diameter, 10 feet 6 inches long; two furnaces to each boiler, 46 inches outside diameter. On the day of the Stringham's launch, the keel of the first of these vessels was laid on the



TORPEDO BOAT STRINGHAM ON THE STOCKS AT THE YARD OF THE HARLAN & HOLLINGSWORTH CO., WILMINGTON, DEL.

In addition to the Stringham the Harlan & Hollingsworth Co. have the following vessels under construction or contracted for:

Ponce and San Juan for the New York & Porto Rico Steamship Co.—335 feet over all; 42 feet beam, moulded; 19 feet draft; 3,250 tons; six water tight bulkheads; accommodations for seventy-two first-class and twenty second-class passengers. Large freight carrying capacity. Engines direct tri-compound 24, 38 and 62 inches diameter and 42 inches stroke; two Scotch boilers 14 feet 6 inches by 11 feet 6 inches with 48-inch furnaces; to have a speed of 12 knots; to run between New York and Porto Rico; the first of these vessels will be launched probably next month and the other shortly afterwards.

Steamer Maracaibo for the Red D line, to run between New York and South American ports; freight and passengers; built under the American Shipmasters' rules; 277 feet 6 inches over all; beam moulded, 37 feet; draft, 10 feet; seven water-tight bulkheads; accommodations for eighty-four passengers; two triple expansion engines, 14, 22 and 36-inch cylinders with 24 inches stroke; speed, 12 knots; two Scotch boilers, 12 feet 3 inches by 12 feet 6 inches with 40-inch furnaces.

Steamer Nantucket for the Merchants' and Miners' Trans. Co. of Baltimore, Md.; to run between Baltimore and Boston; will probably leave the yard completed this week—294 feet over all; 42 feet beam; 18 feet draft; 2,600 tons measurement; dead weight carrying capacity, 2,000 tons; ample accommodation for first and second-class passengers; engines 28, 45 and 72 inches diameter and 54 inches stroke; four Scotch

Stringham's ways before the guests left the yard, showing how expeditiously the work is being carried on.

Freight and passenger steamer for the Metropolitan Steamship Co.; 288 feet 8¾ inches over all; 43 feet beam, moulded; 19 feet depth; engines, triple expansion, 29, 46 and 75 inches diameter of cylinders with 46 inches stroke; four boilers 13 feet long and 14 feet diameter, with three cylindrical furnaces in each, the outside diameter of which is about 48 inches.

CARNEGIE STEEL REORGANIZATION.

Although there is no truth in the report from Chicago that the reorganization scheme of the Carnegie Steel Co., Ltd., has already been dropped, it is generally believed among men well posted in iron and steel affairs that the organization of the new company, which created such a stir in business circles a short time ago, will not be carried out, or at least not on the lines at first proposed. The several principals to the negotiations are in Europe, said to be on vacations, and it is now asserted positively that Mr. Carnegie did not sell his interest to his partners or anybody else, but simply gave an option. Failure of the reorganization plans is said to be due mainly to the price demanded by Mr. Carnegie. The option does not expire until August, but from the present indications it is more than probable that Mr. Carnegie will be the ruling spirit in the big Pittsburg steel concern after August, just as he is now and has been since its inception.

MARINE REVIEW

Devoted to the Merchant Marine, the Navy, Ship Building, and Kindred Interests.

Published every Thursday at No. 418-19 Perry-Payne building, Cleveland, Ohio, by
THE MARINE REVIEW PUBLISHING CO.

Eastern Agents—The Samson Advertising Agency, 102 and 104 Fulton St., New York, N. Y.

SUBSCRIPTION—\$2.00 per year in advance. Single copies 10 cents each. Convenient binders sent, post paid, \$1.00. Advertising rates on application.

Entered at Cleveland Post Office as Second-class Mail Matter.

The hubbub that has been raised regarding double-turrets on the battleships Kearsarge and Kentucky would appear to be very ill-advised, particularly at this time. The discussion seems to have been reopened by the remarks of Capt. W. M. Folger, who is to command the Kearsarge and who has taken it upon himself to severely criticize the double-turret arrangements in remarks that have been allowed to get into the public prints. If the captain is correctly reported, he is opposed to the retention of the double-turrets, and in event of inability to remove the objectionable feature of the vessels, he would at least like to have the naval board of construction give consideration to the question of substituting new batteries for both ships. It will be remembered that the invention of the turrets is attributed to Admiral Sampson, who was chief of ordnance at the time the plans were approved, although the actual designer was Lieut. Strauss, who was then attached to the bureau. Vigorous opposition was manifested when the subject came up for consideration in the naval board of construction, the most earnest opponent being Rear Admiral Hichborn, chief naval constructor, who contended that either the turrets should not be superposed or that no guns heavier than 12-inch calibre be carried. Admiral Sampson, however, put up a strong fight in favor of both turrets and 13-inch guns, and after a controversy that extended over several months won out. Now Capt. Folger would have completion of the ships delayed several months while alterations are made that would involve a general re-arrangement of the battery. It is not, of course, intended to convey the idea that Capt. Folger, who preceded Admiral Sampson in the direction of the ordnance bureau, is not amply qualified to pass intelligent criticism on the present arrangement of the turrets, but it would seem more in accord with the welfare of the service were he to follow the example of Chief Constructor Hichborn, who, although at one time the chief opponent of the plan, now that it has been adopted wishes to see it given a fair trial without interference. If, as those who oppose the idea of double-turrets claim, a practical demonstration at sea is all that is needed to bring about abandonment of the arrangement, the changes can be made as well then as now. To make a trial of the vessels fitted out in accordance with original plans will entail practically no additional cost, and the department will then have settled a problem that has caused no end of discussion ever since the adoption of the plans of these vessels.

Chief Constructor Hichborn of the bureau of construction and repair, navy department, appears to have answered very adequately the criticisms that have been passed upon designs for the new protected cruisers by reason of the requirement of a speed of but 16½ knots. He is quoted as saying with reference to this matter: "It must be borne in mind that the new ships will have sheathed bottoms. There will be no decrease in speed by reason of befouled hulls, and this assurance of a speed of 16½ knots is something that should not be overlooked. Moreover, the ships are designed to carry 700 tons of fuel, and this makes them more efficient in the service where they are called upon to make long runs or remain on blockading duty. The recent experience of the Raleigh on its return trip being constantly required to replenish its coal bunkers is pertinent just at this time, when there is discussion of the endurance of ships of war in connection with their speed. The ships could have a greater speed, but it would be at a sacrifice of something else, and it often is a question which of several features must be retained and developed. The experts of the navy department—and that includes the representatives of all the bureaus—have determined that a ship of 16½ knots speed, with an enlarged coal bunker capacity and able to maintain that speed, is better than a ship of 18 knots on its trial trip. The combination contemplated in the plans and specifications for the new protected cruisers appears to meet the latest demands in the direction of naval ships."

Some dissatisfaction exists among United States consuls at various ports by reason of apparent neglect by our government of opportunities for raising revenue in connection with our new possessions. A very good example of the generosity which it is claimed in some quarters has ceased to be a virtue is afforded by the remarks of Luther T. Ellsworth, United States consul to Puerto Cabello, Venezuela, to a representative of the Marine Review, a few days ago. Heavy depletion of the cattle supply on the island of Cuba during the war has, it seems, proven a sudden stimulus to the export trade of Venezuela, and an average of 10,000 head of cattle is now being shipped from Puerto Cabello each week. These cattle are with few exceptions carried in foreign vessels, and Consul Ellsworth claims that the clearance papers for these vessels, which must be issued from the United States consulate, net under present conditions a total of only about \$400 or \$500, whereas they ought to net in the neighborhood of \$4,000 or \$5,000. The clearance fee is but \$11, while for a similar service under the Spanish domain the charge was \$90 in gold. The consul claims that inasmuch as all American vessels secure these clearance papers free of cost, the plea of encouraging commerce can hardly be advanced as a cause for not increasing the charges.

American ship builders are too busy endeavoring to fill orders to give much attention to what is going on on the other side of the Atlantic, but they certainly have excellent ground for protest because of the example set by A. J. Drexel, James Gordon Bennett and Andrew Carnegie in ordering handsome steam yachts from foreigners. Each of the three contracts is worth upwards of half a million dollars. The fact that the

trio of gentlemen mentioned made their millions in America would probably not be taken as sufficient grounds for complaint if it were possible to secure in England or on the Clyde better yachts than may be had here, but such is not the case. No handsomer steam yachts are afloat than the Amphrodite, built during the past year by the Bath Iron Works of Bath, Me., for Col. O. H. Payne of New York, and the Corsair, constructed by T. S. Marvel & Co. of Newburgh, N. Y., for J. Pierrepont Morgan. A comparison between these yachts and the three foreign-built craft may be awaited with every confidence.

LAKE SUPERIOR COMMERCE.

REPORTS FROM THE CANALS AT SAULT STE. MARIE SHOW A DECREASE OF ABOUT HALF A MILLION TONS IN THE FREIGHT MOVEMENT TO JUNE 1, BUT THE LOSS WILL BE FULLY MADE UP DURING THE PRESENT MONTH.

Reports of canal commerce at Sault Ste Marie to June 1 (both Canadian and United States canals, representing the entire freight movement to and from Lake Superior) show a total of 2,908,068 net tons of freight moved east and west to June 1 this year, as against 3,372,374 tons on the same date a year ago. The decrease of 464,279 tons is certainly not large in view of the late opening of navigation and the Buffalo strike this year. This loss will undoubtedly be made up during the present month, and with the great effort that is being made everywhere to move freight of all kinds, the canal commerce is again destined to surpass all previous records, notwithstanding the short season. Grain is the one item in which there is an increase of shipments over last year. Of wheat there was moved through the canals to June 1 this year 8,443,388 bushels and of grain other than wheat 8,335,892 bushels. In 1898 the figures to June 1 were 5,751,941 bushels of wheat and 8,797,647 bushels of grain other than wheat. Iron ore shipments from Lake Superior, as was already understood from the dock reports, are shown to be 200,000 tons short. Of soft coal there was moved up through the canals 317,201 tons, against 576,009 tons on June 1 a year ago. The hard coal movement shows quite an increase, as the shipments to June 1 this year aggregate 128,789 tons against 62,821 tons last year. Summaries of the full report follow:

MOVEMENT OF PRINCIPAL ITEMS OF FREIGHT TO AND FROM LAKE SUPERIOR.

ITEMS.	To June 1, 1899.	To June 1, 1898.	To June 1, 1897.
Coal, anthracite, net tons.....	128,789	62,821	52,960
Coal, bituminous, net tons.....	317,201	576,009	339,389
Iron ore, net tons.....	1,619,394	1,824,595	890,305
Wheat, bushels.....	8,443,388	5,751,941	11,513,671
Flour, barrels.....	773,238	1,419,270	1,240,585

REPORT OF FREIGHT AND PASSENGER TRAFFIC TO AND FROM LAKE SUPERIOR, FROM OPENING OF NAVIGATION TO JUNE 1 OF EACH YEAR FOR THREE YEARS PAST.

EAST BOUND.

ITEMS.	Designation.	To June 1, 1899.	To June 1, 1898.	To June 1, 1897.
Copper	Net tons...	10,833	26,790	23,984
Grain	Bushels....	8,335,892	8,797,647	3,934,497
Building stone	Net tons...	923	445
Flour	Barrels.....	773,238	1,419,270	1,240,585
Iron ore	Net tons...	1,619,394	1,824,595	890,305
Iron, pig.....	Net tons...	2,347	8,149
Lumber	M. ft. b. m.	97,266	122,261	107,574
Silver ore.....	Net tons...
Wheat	Bushels....	8,443,388	5,751,941	11,513,671
Unclassified freight	Net tons...	28,347	44,442	31,139
Passengers.....	Number....	867	858	594

WEST BOUND.

Coal, anthracite.....	Net tons...	128,789	62,821	52,960
Coal, bituminous.....	Net tons...	317,201	576,009	339,389
Flour	Barrels	42
Grain	Bushels....	4,000	250
Manufactured iron.....	Net tons...	17,043	41,349	19,584
Salt	Barrels	75,465	44,749	58,735
Unclassified freight.....	Net tons...	67,838	72,224	52,731
Passengers.....	Number ...	1,443	1,432	820

SUMMARY OF TOTAL FREIGHT MOVEMENT IN TONS.

	To June 1, 1899.	To June 1, 1898.	To June 1, 1897.
East bound freight of all kinds, net tons.....	2,365,806	2,614,295	1,731,559
West bound freight of all kinds, net tons.....	542,262	758,052	473,396
	2,908,068	3,372,347	2,204,955

Total number of vessel passages to June 1, 1899, was 2,513 and the registered tonnage 2,764,053.

LOSS OF THE PARIS.

MAY RESULT IN THE ACQUISITION BY THE AMERICAN LINE OF A HANDSOME NEW STEAMER—PARTICULARS OF THE STRANDING.

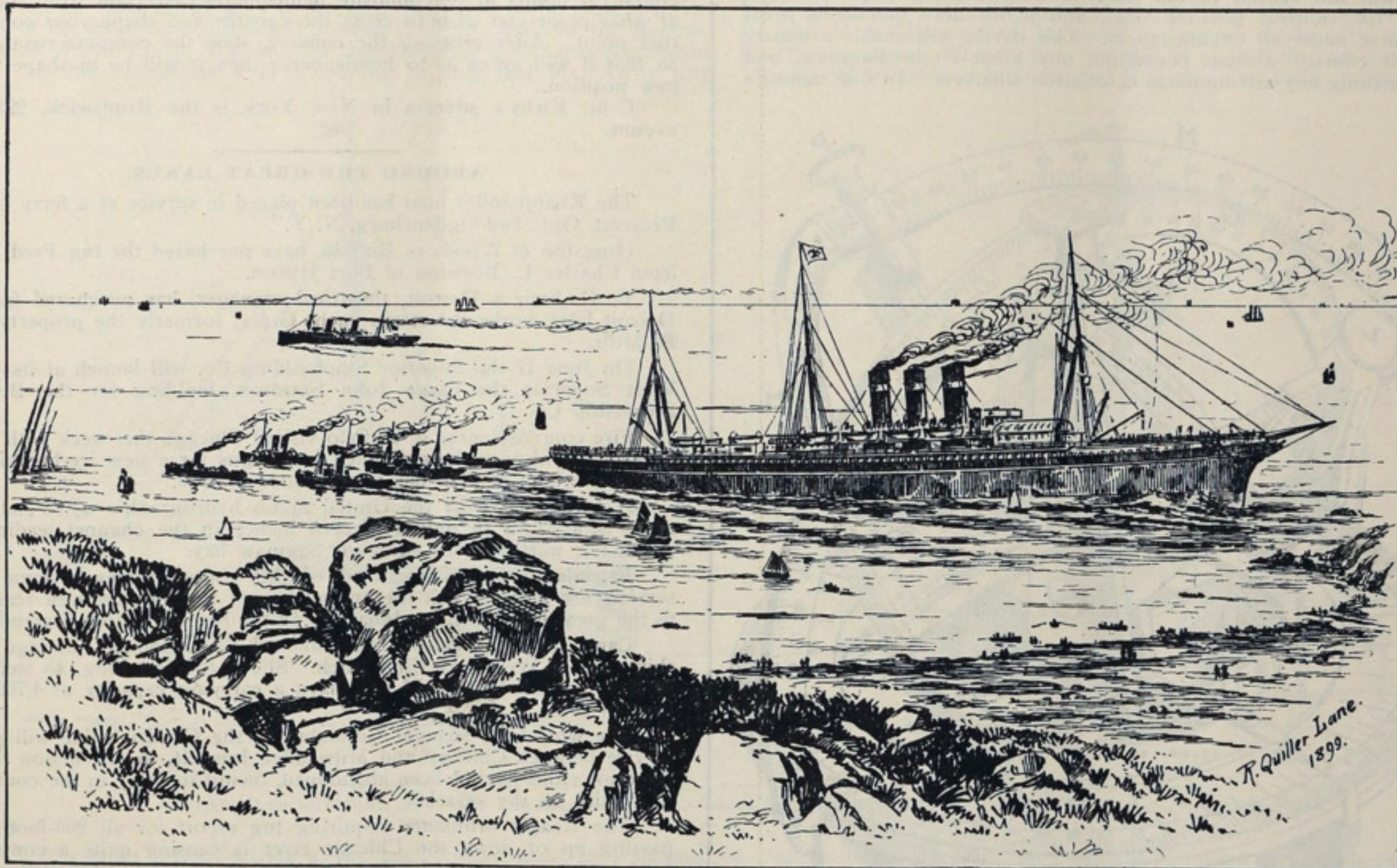
Although as yet unauthenticated, there is no great degree of improbability in the report that the American line steamer Paris, stranded on the Manacles rocks near the entrance to the English channel and probably a total loss, will be replaced by a handsome new passenger and mail steamer. The vessel, if press dispatches from Philadelphia are to be believed, will be larger, speedier and more powerful than even the Kaiser Wilhelm der Grosse, and the further prediction is made that the ship will be built by the Wm. Cramp & Sons Co. It is reasonable enough to suppose that officials of the International Navigation Co. may be considering plans for a vessel to replace the Paris, just as they may be investigating the project (asserted in various newspapers to be an immediate certainty) for the establishment of a line on the Pacific. A steamer to replace the Paris, should that vessel not be saved, will ultimately be a necessity, just as much as it may be expected that a secondary line will be established for some of the company's vessels that are still in good condition, but which have been made obsolete for trans-Atlantic service by the rapid march of progress that characterizes passenger steamers on that route.

The picture herewith presented is a reproduction of a sketch made by R. Quiller-Lane, an English correspondent, who visited the wreck of the

of 50 tons a minute, but the pumps on the ship are able to cope with a flow of 100 tons a minute. Heavy weather has shifted the stern of the vessel 20 yards nearer shore, and the high seas have on frequent occasions compelled the salvage vessels to leave the stranded vessel and anchor some distance from her. There are no signs of straining in the Paris's topsides, but the boilers have been lifted in the forward stokehold. Her bottom is evidently badly damaged and her engines have suffered severely.

NEW SHIPS FOR AMERICAN LINE.

Since the above article was placed in type the announcement has been made that the International Navigation Co. has closed contracts with the Wm. Cramp & Sons Co. of Philadelphia for two handsome steamers of 12,000 tons each. The new vessels will be 600 feet in length by 60 feet beam and in every respect equal, so far as fittings and furnishings are concerned, to the St. Louis and St. Paul. It will be noted that the new ships will be of 6 feet greater length but 3 feet less beam than the St. Louis and St. Paul, and it is also expected that their speed will be fully three knots less. The new vessels, which are to be completed late next summer, will have accommodations for 400 cabin and 800 steerage passengers and will be fitted with twin-screws and triple expansion engines. The steamers will in all probability be used for both the Southampton and Antwerp service. With the four steamers for which a commission was some time ago given to the Clydebank Engineering & Ship Building Co., the International Navigation Co. now has under contract six vessels.



Sketched on the scene for the REVIEW by R. Quiller-Lane.

LAST ATTEMPT TO RELEASE THE AMERICAN LINER PARIS ON THE MANACLES ROCKS.

Paris in the interest of the Review on Saturday, May 27, when the final attempt to float the vessel was made. The supreme effort to float the American liner took place late in the afternoon. Six tugs, the Dragon, Victor, Penguin of Falmouth, the Ranger of Liverpool and the Hercules and Ajax of Southampton were employed, and advantage taken of the highest spring tide. Three hawsers were attached to the steamer's stern and the tugs were placed in three lines, one ahead of the other, and when all were in position they were given the signal from the Paris to go ahead full speed. This was done for upwards of an hour with absolutely no effect, and toward the end of the time one of the hawsers parted and the attempt was abandoned. All the while the steamer's own engines had been set full speed astern.

In referring to the general conviction that if the Paris is ever saved she will have to be lifted and floated, not pulled off, Mr. Lane writes the Review: "I fear very much that they will never get her afloat again, unless they can find some efficient means, and that soon, of lifting her fore end off the rocks which pierce her bottom. If they only had at this juncture Harland & Wolff's immense wrecking tanks it would be a trifling job. These tanks, rectangular in form and each capable of lifting some hundreds of tons, are sunk alongside, say at low water, and chained by they lift the ships with ease. Many a fine vessel was thus saved by their divers passing chains under the hull. The water is then pumped out and aid in the north of Ireland when I was a resident of Belfast, and such vessels were invariably safely towed into port for repairs. The first occasion upon which they were put to a practical test was some twenty-five years ago, I believe, in raising the mail steamer Wolf of Burns' line between Glasgow and Belfast. She was run into and sunk while lying at anchor in a fog off Carrick-furgus, Belfast Lough, and remained at the bottom for months, but by means of the tanks referred to was safely raised and taken up to Belfast, where she was made as good as new."

Divers who have examined the Paris say that the largest hole measures 16 by 12 feet. It is estimated that water enters the vessel at the rate

Horace L. Piper, acting general superintendent of the United States life saving service, announces that bids will be received at Washington until July 5 for furnishing supplies for the fiscal year ending June 30, 1900. The supplies must be delivered at New York City, Grand Haven, Mich., and San Francisco, Cal. Specifications for these supplies may be obtained from the main office or from the superintendents of life saving districts, the headquarters of which are at the above mentioned cities.

Work on the big White Star liner Oceanic is progressing at the yard of Harland & Wolff, Belfast, Ireland. Masts and funnels are now complete. Owing to the extreme height of the funnels, two of the top courses of plating had to be built in their places in sections, it being found impossible to reach them with the large crane. The height from top of furnace grate bars to the top of funnels is 120 feet.

The navy department recently detailed Chief Engineer B. C. Bryan and Passed-Assistant Engineer W. W. White to inspect the mechanical stoker fitted in the Minnesota company's great lake steamer Pennsylvania. It is claimed that the device is not suited to use on naval vessels, owing to the arrangement of the coal bunkers. The stoker is manufactured by the American Stoker Co., New York City.

All the old officers of the International Navigation Co. were re-elected at the recent annual meeting. They are: Clement A. Griscom, president; William H. Barnes, first vice-president; James A. Wright, second vice-president; James S. Swartz, treasurer; and Emerson E. Parvin, secretary.

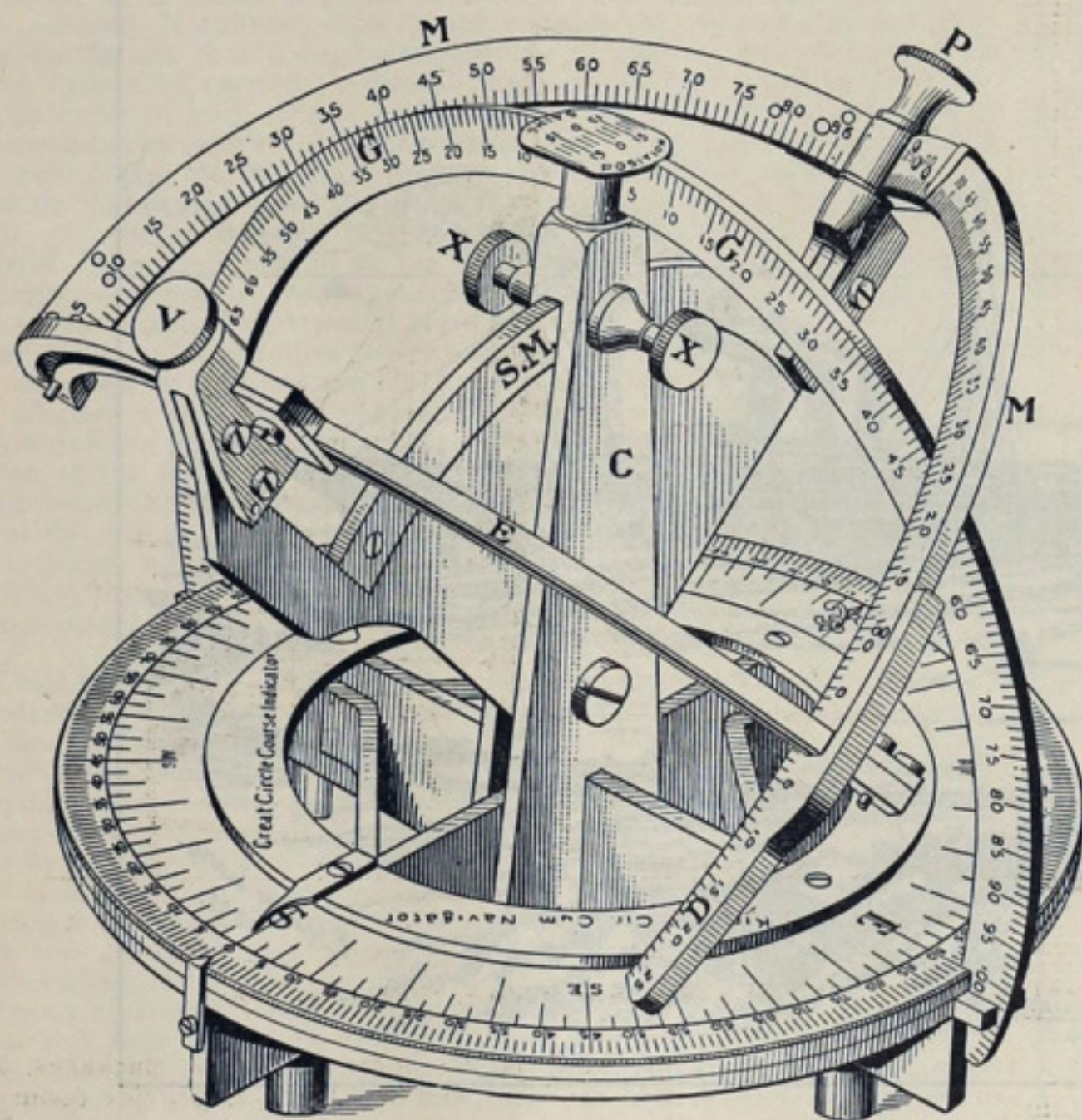
The great lakes steamer Roanoke, which was taken to the Atlantic coast under charter by the Atlantic Transportation Co., is at the yard of the Harlan & Hollingsworth Co., Wilmington, Del., being refitted to enter the lumber carrying trade between Philadelphia and southern ports.

GREAT CIRCLE COURSE INDICATOR.

A DEVICE FOR THE QUICK AND ACCURATE SHAPING OF COURSES. JUST PATENTED
BY CAPT. S. R. KIRBY, OF NEW YORK.

Capt. S. R. Kirby, father of Frank E. and F. A. Kirby of Detroit, and who is himself well known in shipping circles throughout the country, sends the Review a description of an instrument for navigation, which he has just patented in England and in this country, and which he calls "Kirby's Great Circle Navigator" or "Kirby's Circum Navigator." It is an indicator for the quick and accurate shaping of courses, and Mr. Kirby claims that it can be used without mathematical calculations or figuring over diagrams or charts, by any navigator who can use his sextant and reduce observations accurately.

As a preface to a description of the indicator, Capt. Kirby says: "Steam has taken the place of sail on nearly all ships for long voyages as well as for coasters. Hence the navigator can always shape a course to suit, without reference to wind or tide, and thus he is enabled to keep his ship at all times exactly on the great circle, which passes through his ship and the port or point of destination. As the great circles are the shortest possible distances between points on the face of the globe, the navigator can thus save, over the old methods of navigation, an average of fully 5 per cent. of his expense for fuel, plus time, which is equally valuable. The shipmaster that does not take advantage of the great circle method will certainly have to 'take to the woods' sooner or later. Owners will not submit to old wasteful methods; the ship must 'get there' in the shortest possible time, and hence must pursue a great circle course under all circumstances. This device will enable a master to lay his courses without consulting any great circle diagrams, and without making any astronomical calculation whatever. In one minute's



time, after ascertaining his position, he can lay his course accurately. The 'Circum Navigator' also gives him all future courses for keeping his ship on the line, and all the points can be read off the instrument at a glance in the same manner as he reads his sextant."

Various parts of the indicator, shown in the illustration printed herewith, are thus described:

C. Centre column of instrument, on the apex of which a disc vernier, the centre of which is the ship's place at all times.

S. M. Ship's meridian, which can be adjusted to any latitude required. Attached to the meridian is the pole (P) and the equatorial arc (E), 90° distant from each other.

P. Pole of the earth, which answers for either hemisphere.

M. M. Meridians attached to the pole (P) and to the equatorial arc (E), and which are adjustable to any longitude or difference in longitude between ship and place bound for.

E. Equatorial arc adjustable to any difference of longitude required, east or west of ship's position, limited to 125°, which is sufficient to reach any point sought.

V. Clamp for holding equatorial arc (E) in place, which also has a vernier reading to minutes.

X X. Clamp for holding the ship's meridian (S. M.) in place when adjusted to suit latitude of ship.

D. Declination arc, to be used when the sun and other objects are in different hemispheres for taking bearings, etc. This arc D fits either arc, M. M., so that it will answer for both anti meridian and post meridian observations.

G. G. The great circle which passes through the ship. Its ends reach down to the compass rose and it is adjustable to suit latitude of place bound for. It also reads the distance in knots or degrees, and when properly placed reads the true course to pursue.

This instrument will give the true bearing of the sun at any moment of time when it can be seen, and can thus be used to find the ship's posi-

tion as by the "Summer" method. It gives the complement of the sun's altitude at the same time by reading the G. C. arc when adjusted to suit the declination of the sun at the moment, etc.

Instructions for using the instrument are as follows: First see that the compass rose is clamped in line with the ship's meridian (S. M.), and that it agrees as to hemisphere, that is so that the pole will agree with compass rose north or south, as the case may be, both being on the same side of instrument. Now unclamp S. M. by screws X X; bring either meridian (M) over the centre of the disc, or ship's place; then read off the latitude required, namely, the ship's latitude. When so adjusted clamp in place by X. X. Now set off on the equatorial arc (E) difference in longitude between ship and place bound for, east or west, as the case may be. Clamp the equatorial arc (E) in place by screw (V); then one of the meridians (M) will agree with meridian of place bound for. Now revolve the great circle (G) around so that it will agree with the latitude of the place sought on the meridian of the place of destination, as found in your table of maritime position or on the chart. The great circle will then indicate the first course to pursue—true course of compass is clamped due north and south, or magnetic course if the variation has been adjusted previously. Now leave the great circle arc as set and unclamp the equatorial arc (E), and bring the meridian arc (M) of the place bound for up to say 5° of the ship's position; read the latitude and longitude of that point; then take say 10° or more along the great circle arc (G) and read off their position and at the same time note where the highest latitude occurs; all of which can be read direct from the instrument without altering any of the other parts. When shaping a course to points in the opposite hemispheres, ascertain from the chart at what point you wish to cross the equator and shape your course for that point. After crossing the equator, slew the compass rose around so that it will agree as to hemisphere; then it will be in shape for the new position.

Capt. Kirby's address in New York is the Brunswick, 223 Fifth avenue.

AROUND THE GREAT LAKES.

The Knapp roller boat has been placed in service as a ferry between Prescott, Ont., and Ogdensburg, N. Y.

Hingston & Woods of Buffalo, have purchased the tug Fred A. Lee from Charles L. Boynton of Port Huron.

E. D. Stair a Detroit, theatrical manager, has purchased from the Detroit boat works the steam yacht Grace, formerly the property of M. B. Mills.

On June 17 the Superior Shipbuilding Co. will launch at its yard at West Superior the barge John Smeaton, building for the Bessemer Steamship Co.

Fire commissioners of Buffalo visited Chicago this week with a view to securing ideas to be embodied in designs for a new ice-breaking fire boat, for which Buffalo has appropriated \$75,000.

A notice issued by the United States hydrographic office states that there is a depth of only 11 feet 5 inches in the channel leading into Alabaster, northwestern shore of Saginaw bay.

Friends of Byron L. Reed of the United States revenue cutter service, are pleased with the announcement that he has been reassigned to the great lakes with headquarters on the revenue cutter Fessenden.

Capt. James Davidson has launched the schooner Santiago at his ship yard at West Bay City, Mich. She is 335 feet long, 45 feet beam, 26 feet molded depth, and will have a carrying capacity of 4,700 gross tons of ore.

The whaleback steamer Columbus of the Goodrich line will go into service between Chicago and Milwaukee June 24, the excursion to Lake Superior cities having been abandoned, owing to delay in the completion of repairs on the vessel.

The Neagle ordinance requiring tug escort for all 200-foot vessels passing up or down the Chicago river is causing quite a controversy between vessel men and other interests in Chicago. The ordinance is liable to pass the council.

According to J. H. Darling, of the United States engineer corps at Duluth, the mean level of Lake Superior during May was 0.72 feet above low water datum, which is 0.50 feet higher than the average May stage for twenty-six years from 1872 to 1897.

The Goodrich Transportation Co. of Chicago, has had from 150 to 200 men steadily employed at its repair shop at Manitowoc, and it is estimated that more than \$200,000 has been expended in repairs made to the steamers of the line there during the past winter.

The Kingsford Foundry & Machine Co., Oswego, N. Y., has just completed and shipped to Ashland, Wis., a boiler for the steamer A. C. Van Raalte. Centrifugal pumping machinery manufactured at the Kingsford works is described in a very neatly printed and illustrated catalogue recently issued.

There is considerable uncertainty as to when the White Star line of Detroit, will get the large side-wheel river steamer for which the Detroit Shipbuilding Co. has the contract. The boat was to have been delivered June 1 but owing to inability to get material only the keel and guard beams have been laid.

Green Bay, Wis., dispatches announce the completion of the superstructure of the new light-house at Long Tail point. Two brick walls are to be built around the outside of the substructure, each wall to be 5 feet 8 inches in height and the two being separated by a space of 5½ feet, which will be filled with solid concrete. The outside wall will be faced with an iron frame for protection against ice.

Both the Sault canal reports and reports from Buffalo indicate that the shippers of anthracite coal are probably in better shape than their brethren in the soft coal trade, as regards shipments thus far, notwithstanding the Buffalo strike of grain shovellers which held boats in port for a long period. On the first of June shipments of hard coal through the canals at the Sault to Lake Superior were considerably in excess of the shipments a year ago, and it is reported from Buffalo that during the

first two weeks of June shipments footed up 144,708 tons, as against only 174,709 tons in the entire month a year ago.

A note in this column last week referred to the thorough rebuild given the steel steamer Arthur Orr at West Superior during the past winter. It was said that the work of lengthening and repairing the vessel probably involved an expenditure of \$50,000. "It is true, as you say," says a vessel owner who knows all about bills paid for rebuilding the Orr, "that she is a much stronger vessel than she was before the stranding, but your estimate of the ship yard bills, undoubtedly made off hand, is entirely too low. There was expended on this vessel after she entered the dry dock (no reference to cost of releasing her) full \$90,000."

Capt. J. G. Warren, United States engineer at Milwaukee, has awarded contracts for harbor improvements at Racine and Kenosha, Wis., as follows: Crib pier extension and breakwater at Racine harbor, Robert B. Rice of Muskegon, Mich., \$68,915; removal of old pier and dock at Racine harbor, Samuel O. Dixon of Milwaukee, \$6,650; dredging at Racine harbor, Samuel O. Dixon, Milwaukee, Wis., \$17,600; crib pier extension and breakwater at Kenosha, Robert B. Rice, Muskegon, Mich., \$85,695.50; pile pier at Kenosha, James Cape & Sons, Racine, Wis., \$19,251.34; and to Samuel O. Dixon, Milwaukee, for removal of old pier at Kenosha, \$15,000, moving cribs, \$7,000 and dredging \$24,840.

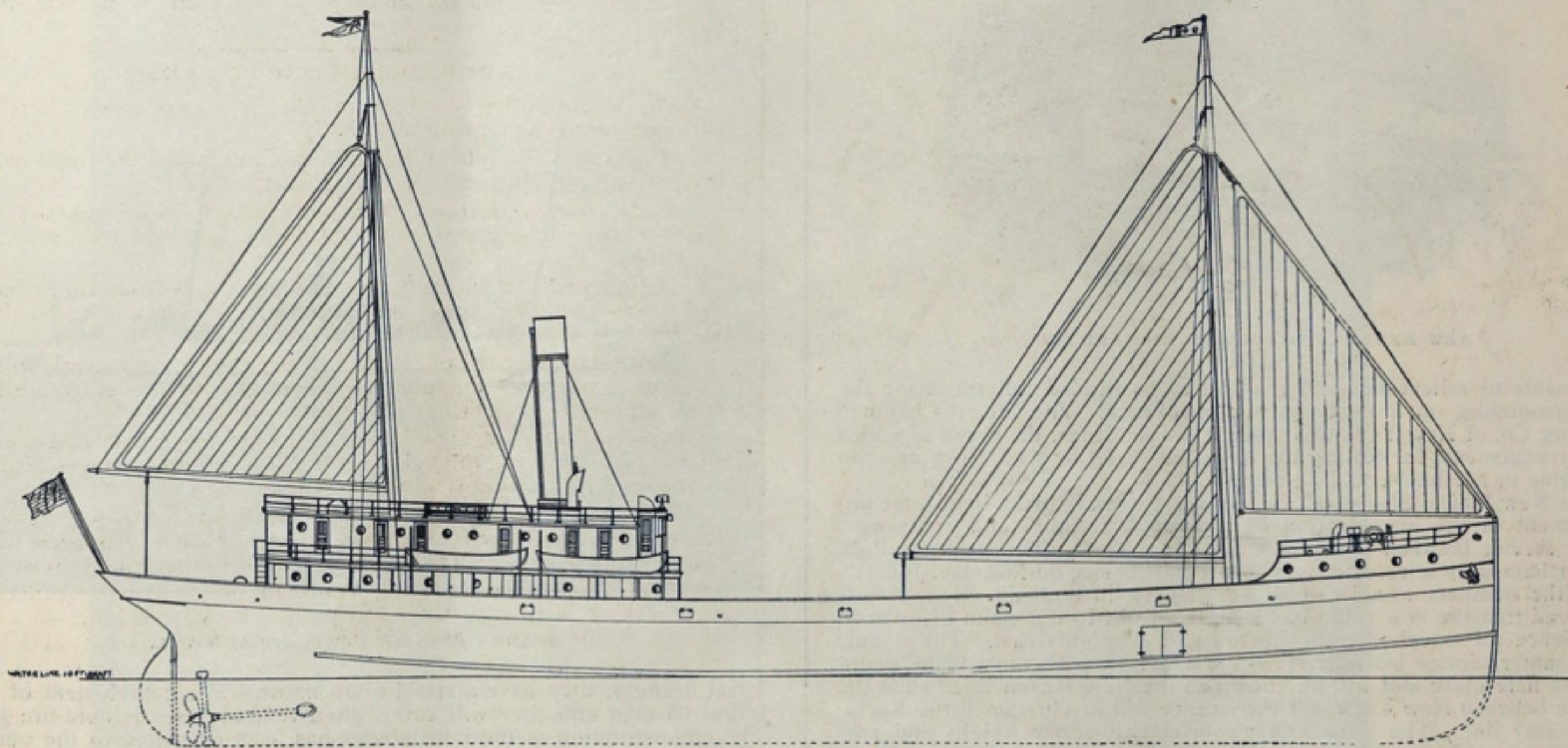
Mr. Frank E. Kirby, who is still engaged by the government in looking after army transport work, says that in all probability it will be fully a year before he severs his connection with the Detroit Ship building Co. and his plans beyond that time have not been definitely determined. Mr. Kirby goes to Toronto this week to be present at the trial of the handsome side-wheel steamer Toronto, built by the Bertram Engine Works Co. of Toronto, for the Richelieu & Ontario Navigation Co. In this connection it is interesting to note that Mr. Kirby with

STEEL STEAMER 1900.

A VESSEL TO BE BUILT FOR THE ALASKA PACKERS' ASSOCIATION BY THE WOLFF & ZWICKER IRON WORKS, PORTLAND, OREGON.

A contract for a steel steamer to be built for the Alaska Packers' Association (picture presented herewith) has been awarded to the Wolff & Zwicker Iron Works of Portland, Ore. The vessel will be the first of her kind constructed on the Pacific coast and has been designed especially to meet the conditions of the service in which she will be engaged. Primarily the service of the vessel will be in Alaskan rivers, where are located the extensive salmon canning interests of the Alaska Packers' Association. The association operates thirty-five canneries and has in its employ more than 9,000 men. Something of the magnitude of its shipping interests may be imagined from the fact that it owns and operates thirteen sailing ships and barks, three schooners, twelve small steamers of about 80 horse power each, two steamers of 380 horse power each and thirty steam launches.

The vessel for which the contract has just been let to Wolff & Zwicker is to be a twin-screw steamer 217 feet over all, 35 feet beam and 18 feet depth, with a displacement of 2,100 tons. The designs were made and the drawings and specifications prepared under the direction of William P. Lindley, who has for the past three years been fleet engineer for the association. The new steamer, which is to be christened 1900, is expected to be ready to go into commission next spring. All specification requirements will be in excess of Lloyds. She will have a cellular double bottom and longitudinal bulkhead to between docks with six watertight compartments. The construction will be of steel throughout with the exception of cabin trimmings and linings. The main hatches will be of



STEAMER 1900 BUILDING FOR THE ALASKA PACKERS' ASSOCIATION, BY WOLFF & ZWICKER IRON WORKS, PORTLAND, ORE.

Mr. A. Angstrom of the Bertram works, has prepared plans for a steamer to run through from Toronto to Montreal and also for a type of steamer for service on the St. Lawrence alone, but the Richelieu company, although certain to undertake the building of more new vessels is as yet undecided.

The Cuthbert Shipbuilding Co. at South Chicago has petitioned the Illinois legislature for permission to erect a line of docks around the island at the foot of Ninety-second street. This island was a disused strip of sand in the Calumet river until the organization of the shipbuilding company last January. At that time a building, 120 by 30 feet was erected, and under its roof work was begun on the racing craft designed to compete for the Canadian cup in the races this summer. Yachtsmen believe that in the Veva, A. G. Cuthbert, designer, has placed in the water one of the fastest yachts of its class. The Cuthbert company will enlarge its plant and build racing and pleasure yachts on a more pretentious scale. For this more dock room is required. The Veva will make a trial trip for its owners, George H. Lytton, George R. Pierce and S. N. Smith, in the near future.

The Wm. Cramp & Sons Co. of Philadelphia seems to have acquired of late a perfect string of records very much to its credit. Further particulars regarding the trial of the Ward liner Mexico are just at hand. The contract speed is 16 knots, but for four consecutive hours the vessel maintained a speed of 17.21 knots, which is fully a tenth of a knot better than the showing of her sistership, the Havana. The Mexico's best speed was 18 knots and she developed 6,666 indicated horse power, which is 128 in excess of the Havana. The maximum of revolutions was 118 a minute.

The Plant line recently issued a form of invitation for an inspection of the steamer La Grande Duchesse and an excursion in Boston harbor that is quite the most artistic thing with which Passenger Traffic Manager B. W. Wrenn has yet favored his friends. The front cover contains a beautiful tint picture of the Duchesse with the American and Plant line flags in colors. The steamer is now in service between Boston, Halifax and Charlottetown.

ample size to facilitate the handling of timber and heavy packages, and the lower hold is 108 feet in the clear, the idea being to provide room for a cargo of at least 33,000 cases of salmon.

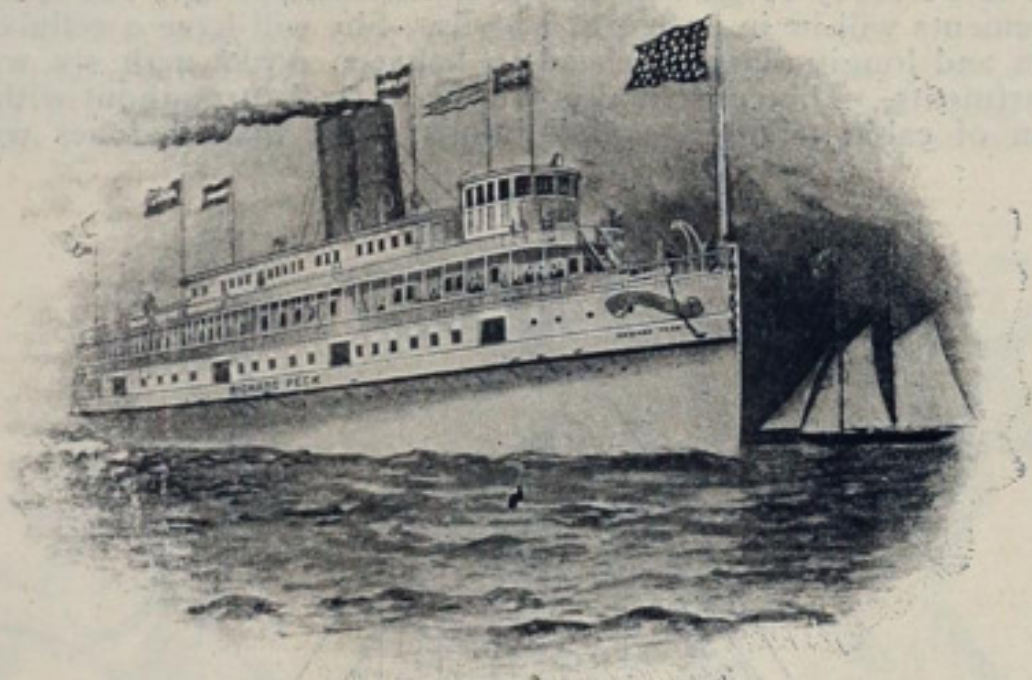
Engines will be triple expansion, with cylinders of 9, 15½ and 27 inches diameter, and 24 inches stroke, being designed for 150 revolutions per minute. There will be piston valves in the high and intermediate cylinders and a double ported slide valve in the low pressure, all being worked by Stevenson valve gear. The crank shaft will be of the built-up type, 6 inches in diameter, and an evaporator and auxiliary condenser will be provided. The engines will develop 750 horse power and are expected to drive the vessel at a speed of 10 knots. Steam will be supplied from two Babcock & Wilcox water tube boilers, with a working pressure of 225 pounds and a combined heating surface of 2,840 square feet. The equipment of the vessel will include steam reversing gear, reply telegraphs, and everything involved in the latest practice in construction. A General Electric Co. lighting plant will be provided, together with steam steering gear, a Shaw & Speigle towing machine, American Ship Windlass Co.'s No. 6 Providence pump-brake windlass for 1 5-8-inch chains, and two stockless anchors of 3,000 pounds each. The ground tackle has been made very heavy on account of the heavy tides in the northern waters.

Accommodations will be provided on this steamer for twenty-six cabin and an equal number of steerage passengers, and many of the state rooms will be fitted with baths. The association does not intend, however, to carry passengers other than its own employees. In calling for bids for the 1900 the packers' association made a departure from the general practice on the northern Pacific coast, in having complete working drawings made, blue prints of which were submitted to the builders. The contract was awarded to Wolff & Zwicker, the Review is informed, because of the excellent record made by that firm since they have taken up steel ship building. That this is justified will be realized when it is noted that the Portland firm are the builders of the torpedo boat Fox, described in the last issue of the Review, which on her first official trial made 23½ knots, although the contract called for but 22½ knots. It is understood to be the intention of the Alaska Packers' Association to build three or four other steamers that will be practically duplicates of the 1900.

NEW HAVEN BOATS COLLIDE

BUT THE SERVICE OF THE COMPANY WILL BE ONLY PARTIALLY DISRUPTED AND FOR ONLY A SHORT TIME—NEW SERVICE BETWEEN NEW YORK AND PROVIDENCE.

It is gratifying to learn that the collision of the steel twin-screw steamer Richard Peck and the wooden side-wheeler C. H. Northam off Norwalk, Conn., will not seriously embarrass the New Haven Steamboat Co. in its project for the establishment of a regular line between New York and Providence, R. I., on which these two vessels were to have been operated. The collision occurred in a dense fog at 3:30 o'clock in the morning and the Northam was so badly damaged that her captain was obliged to beach her at Green's farms on the Connecticut shore to prevent her from sinking. At the time of the accident the Peck was going at somewhat less than half speed, or about 8 miles, and the Northam was making less than 7 miles. Engines were reversed at full speed, but the steel cutwater of the Peck ripped through the starboard bow of the Northam about 20 feet abaft the stern. The Peck backed out of the gap, which was 8 feet wide at the main deck, and extended to the water line. The Peck had merely a few plates dented and her cutwater slightly twisted. The guard rail of the Northam was smashed and some of her compartments stove in. She took in water so rapidly that her pumps



NEW HAVEN LINE STEAMER RICHARD PECK.

were unable to relieve her and she had to be headed full speed for the shore, grounding on a sandy part of the beach. The Merrit-Chapman Wrecking Co. of New York was notified and sent tugs, the crews of which made arrangements for towing the damaged vessel to New York as soon as the hole in her bow could be patched up.

The New Haven Steamboat Co. only last week issued a handsome announcement of the inauguration of a through freight and passenger steamer service between Providence and New York. The steamers Peck and Northam were selected to inaugurate this service on Monday, June 12, and as the steamers would call at New Haven in both directions it was considered that the new route had a perfect right to the claim of greatest convenience for travelers from Boston and all points east. The double daily steamer service between New York and New Haven will be maintained as heretofore and will be known as the New Haven line, while the new line between New York and Providence will be christened the Narragansett Bay line. The large and powerful twin-screw freight and passenger steamer Chester W. Chapin, now building at the yard of the Maryland Steel Co., Sparrow's Point, Md., and which was described and illustrated in the Review a few weeks ago, will be completed about Sept. 1 and placed in service on the Narragansett Bay line, and it is claimed that in all probability the Chapin will prove speedier than even the Richard Peck, whose equal, according to her owners, has not as yet appeared in the waters where she plies. The Peck, it will be remembered, was built by the Harlan & Hollingsworth Co. of Wilmington, Del., in 1892 from designs by A. Cary Smith.

Chairman Burton of the committee on rivers and harbors of the house of representatives has expressed the opinion that the next river and harbor appropriation bill will be a heavy one. In the course of his remarks he said: "We shall have to authorize a continuance of the continuing contracts on the Mississippi begun in 1896 and expiring in 1900. The mouth of the river will also cost \$11,000,000 if we accept the Southwest Pass project, which seems the only way to a permanently satisfactory outlet. We should also insist that the Nicaragua canal be neutralized and not made the exclusive property of the United States. If this were done, in the event of war, it could not be destroyed. I wish also that a private company might build it. There is considerable evidence that the Panama canal might be built in this way. For the United States government to undertake either would be a pretty expensive job."

A. J. Drexel of Philadelphia and G. L. Watson, the well known naval architect of Glasgow, Scotland, recently visited Scott's ship yard at Greenock where the yacht building for Mr. Drexel is now under way. This vessel, which will cost \$500,000, will be 272 feet in length, 36½ feet beam and will be flush decked. Her speed will be something less than that of James Gordon Bennett's new yacht, which will be constructed by Denny Bros. of Dumbarton, Scotland, and which will be notable for her great beam amidships. The beam of both vessels have, however, been considerably increased since the acceptance of original plans. The Drexel yacht is to be completed within a year.

Nickel Plate road excursion to California account of National Educational Association convention at Los Angeles, Cal.—Tickets on sale June 24 to July 7. One fare, plus two dollars, for the round trip. Ask agents of the Nickel Plate road for particulars.

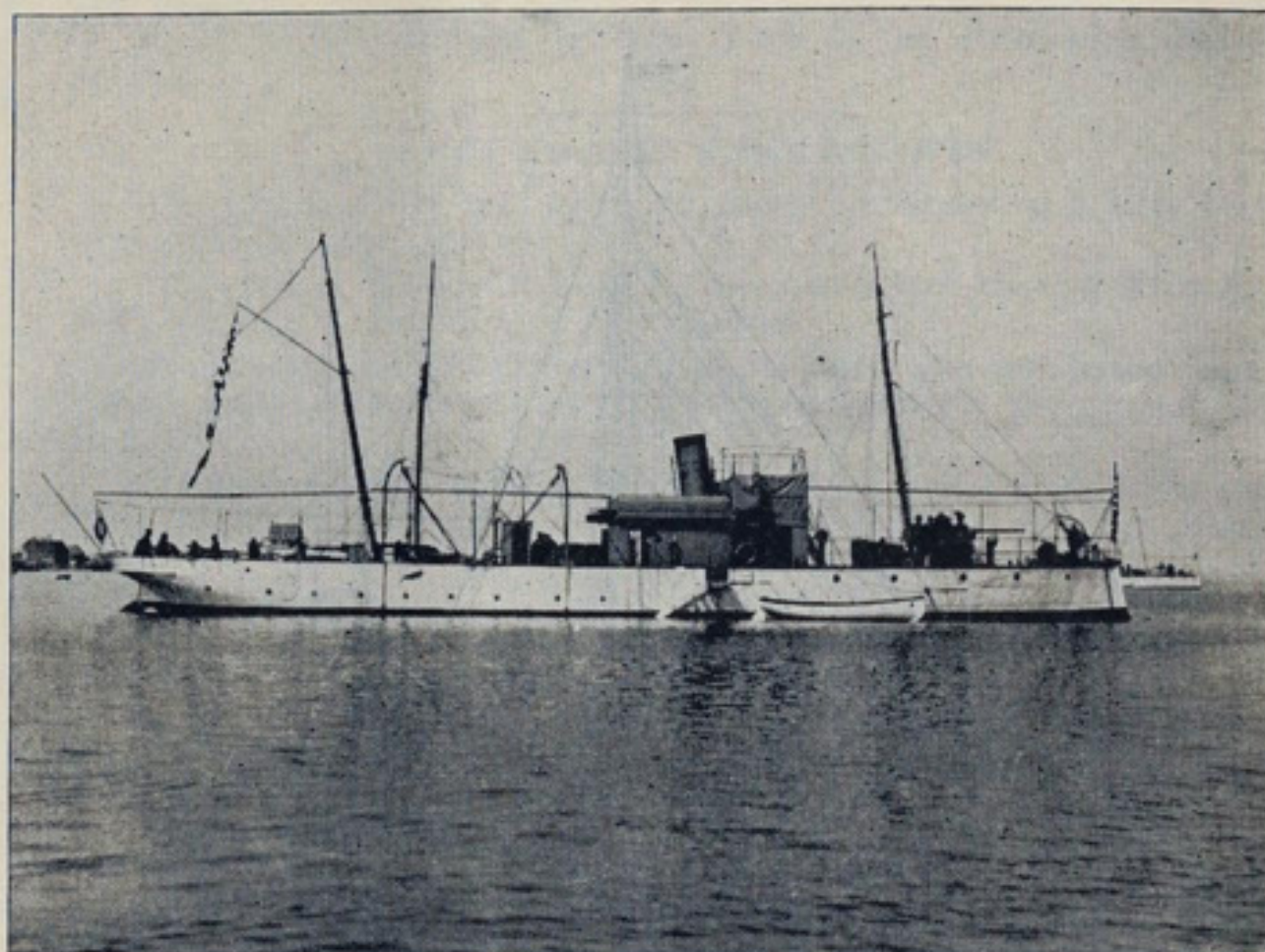
44, July 6.

CAPTURED VESSELS.

THE FORTUNES OF THE SPANISH-AMERICAN WAR ADDED QUITE A NUMBER OF SERVICABLE CRAFT TO THE UNITED STATES NAVY.

A survey is now in progress to determine what repairs to the recovered Spanish cruiser Reina Mercedes will be necessary in case the navy department should decide to grant requests to have the vessel pay short visits to the principal cities on the Atlantic coast within the next few weeks. Whatever may be the ultimate decision in this matter, it is certain that nothing will be done looking to the extensive overhauling that will ultimately be necessary, until congress has passed upon the subject. Read Admiral Hichborn, chief constructor of the navy department, estimates that an expenditure of fully \$500,000 will be necessary to place the vessel in condition for cruising service. He takes the position also that it would not be possible to devote to this purpose any of the funds available for the maintenance of repairs upon naval vessels. The arrival in this country of the Reina Mercedes, preceded but a short time by the recently recovered gunboats Alvarado and Sandoval, has created no small degree of interest in the vessels which have been added to the United States navy as a result of the recent conflict.

The two gunboats mentioned, which are sister vessels and were sunk during the war in Guantanamo bay, will, when they have undergone the overhauling now in progress, be among the most valuable of the dozen or more vessels transferred from the Spanish to the American navy. The Alvarado and Sandoval were built in 1895 by the Clydebank Engineering & Shipbuilding Co., and are each 109 feet in length and of 100 tons displacement. The feature of their design which makes them especially valuable for work in our new possessions is the fact that while of only



FORMER SPANISH GUNBOAT SANDOVAL.

5 feet draught, they have a speed of 19 knots. The complement of each is but 33 men and they will carry when refitted several rapid-fire guns. The reconstruction of these little craft has been entrusted to the officials of the Portsmouth, (N. H.) navy yard. The \$15,000 which is to be expended on each will provide, among other things, for making the magazines watertight, overhauling the interior, replacing considerable wood work with iron and overhauling the engines.

Meanwhile Naval Constructor W. L. Capps has made a report to the department as to the needs of the cruisers Isla de Cuba, Isla de Luzon and Don Juan de Austria, which he was instrumental in recovering at Manila bay and which are now in dry dock at Hong Kong. Constructor Capps reports that the forecastle decks of the Cuba and Luzon are in fair condition, being of teak and not having been submerged. It will thus be possible to simply recalk them instead of renewing them entirely. It is also proposed to omit considerable ballast and maintain the stability of the ships by lowering the top weights. The conning towers will be removed, thereby gaining storage for 50 tons of coal. Much of the woodwork has been done away with, the machinery has been thoroughly overhauled and the boilers retubed.

The pluck of the New Haven Steamboat Co. in giving notice that it will invade the territory of the New York, New Haven & Hartford Railroad between New York and Providence is commendable to say the least. That this big railroad corporation has gradually acquired all the Sound and all rail routes between New York and Boston the public are well aware. That little quarter to patron, whether he be shipper or passenger, is given by this corporation everybody knows, hence it is refreshing to learn that the New Haven company has a Boston connection from Providence and when its new steamer Chester W. Chapin is completed, with the speedy Richard Peck, it will make a first-class independent line between New York and Boston which should receive the patronage of all citizens opposed to extremes in monopolies.—Marine Journal, New York.

Proposals for breakwater extension work at Marquette, Mich., will be opened July 6 by Major Clinton B. Sears, United States engineer at Duluth. On July 8 Capt. Chester Harding, also of the engineer corps, will open at his office, Grand Rapids, Mich., proposals for removal of part of the wreck of the steamer H. A. Tuttle in the harbor of Michigan City, Ind. Capt. Harding also advertises for bids for crib work and repairs to government piers at South Haven, Mich. Proposals for the South Haven work will be opened June 23.

RIVER VESSELS.

DEMAND FOR STEAMERS FOR INLAND NAVIGATION IS SO URGENT THAT AT LEAST ONE BUILDER IS OBLIGED TO DECLINE CONTRACTS.

A very unusual condition of affairs prevails at present in many of the ship yards on the inland rivers of America. This is shown by the fact that Capt. David S. Barmore, proprietor of the Madison marine railways and ship yard, has recently found it necessary to decline several proffered contracts for new vessels and has now on hand sufficient work to keep his full force of workmen busy for many months. The principal vessel now under construction at this yard is the War Eagle, being built for the Eagle Packet Co. of St. Louis, Mo. She is 260 feet in length, 38 feet beam, and 7 feet depth of hold, with 14 foot guards. She is fitted with engines of 22 inches diameter of cylinder and 9 feet stroke. Steam will be supplied from four boilers, 42 inches in diameter by 22 feet length, with 6-inch flues, and allowed 190 pounds of steam. The buckets measure 12 feet. The cabin is very handsome, being full length with thirty-four state rooms on either side and with a 90-foot texas. The new vessel replaces the wrecked steamer Spread Eagle, but is expected to develop considerably more speed than the ill-fated vessel. The new boat will have capacity

SECRETARY LONG ON THE NAVY.

Secretary John D. Long of the United States navy department contributes to the current number of Frank Leslie's Popular Monthly an elaborately illustrated article on "The Building of the New Navy." The article is for the most part a comprehensive if condensed history of the growth of our navy, so far, at least, as modern vessels of war are concerned, but there are some expressions of personal opinion as the following paragraphs will indicate:

"It must not be thought that a ship yard is capable of building a navy. It is one thing to build a merchant ship and quite another to build a vessel of war, for the naval ship must have armor and guns and powder and shells. For the production of each of these requisites large independent plants are necessary, the establishment of which involves the investment of large sums of money. It has, therefore, been the problem of those intrusted with the upbuilding of our navy, not alone to build ships, but to domesticate other industries upon which the independence of our country in the matter of naval ship building is conditional. It has taken a number of years to develop a safe and efficient smokeless powder, but this result has at last been accomplished, and though the emergencies of the late war required large quantities of brown prismatic powder to be purchased, the last orders for this kind of powder have been



SCENES AT CAPT. BARMORE'S MADISON MARINE RAILWAY AND SHIP YARD, MADISON, IND.

for 1,100 tons of freight and will be fitted with all modern improvements including an electric lighting plant. The boat will cost when completed in the neighborhood of \$60,000. Other work on the stocks at the Madison yard includes three large barges for the Huntington & St. Louis Towboat Co. and a fine barge for Capt. Oscar Barrett.

Capt. David S. Barmore, proprietor of the Madison yard, is one of the most progressive builders on the inland rivers. He was born in Cincinnati and has spent nearly his entire life in the ship yards of Jeffersonville and Madison, finally locating permanently in the latter city about ten years ago. During the decade he has built some of the finest vessels ever turned out on the rivers, and has at the same time handled an immense amount of repair work, the extent of which is perhaps the best indication of the reputation of his yard.

The navy department has decided to undertake further experiments with liquid fuel on the torpedo boat Talbot, now at the Norfolk navy yard. The Talbot will be put in condition for the tests at once, and then taken to New York, where the experiments will take place. Twelve months will be consumed in conducting practical trials with different burners and the several systems recommended to the department. Lieut. J. C. Leonard will be assigned to the command of the Talbot and will conduct the tests.

George E. Currier & Son of Newburyport, Mass., write the Review that they are making satisfactory progress in the equipment of their ship yard. They recently purchased an 80-horse-power boiler, a 50-horse-power engine and a large band saw capable of sawing any wooden frame for vessels. This firm has several contracts in sight in addition to those recently closed.

The handsome steamer La Grande Duchesse, built by the Newport News Ship Building & Dry Dock Co. for the Plant line, broke the existing records between Boston and Halifax on her first trip between those ports. Her time was 21 hours and 47 minutes.

filled, and hereafter smokeless powder will be made for the navy. Two private plants, each capable of making from 5,000 to 6,000 pounds per day, are now at work to their full capacity for the navy. In addition to this, a smaller factory is under construction by the department at its own proving ground.

"The unrivalled success of our navy in the recent war has proven beyond all doubt the honesty of the workmanship and materials which have entered into the construction of our ships, and of all our war material. Is it not in the highest degree gratifying that of the hundreds of guns of all calibers, up to and including the 13-inch, which have been built and placed on our naval vessels, not one case of failure, either on the proving ground or afloat, has occurred? Our ships are excelled by none the world over, and wherever they come in contact with the ships of other nations they do not suffer by comparison. Could we have better demonstration of the high state of efficiency to which this branch of the national defense has been brought, than the rapidity and completeness with which the two Spanish fleets were destroyed? Our navy, however, is as yet small compared with that of Great Britain or France. To what extent it shall be further increased is a question for congress to determine. Judging by the liberality of legislation in recent years, it is probable that it will be conservatively augmented to a reasonable limit as the years go by. There is a wise conservative element opposed to the maintenance of too large a military or naval establishment, but the trend of events is just now in the direction of continued increase. The recent war has demonstrated to the people the importance of naval power, especially in view of the increased responsibilities which have devolved upon us by the acquisition of the Philippines, Puerto Rico and the Hawaiian islands."

National Educational Association convention at Los Angeles, Cal., July 11 to 14. Go via the Nickel Plate road. A peerless trio of fast express trains daily. Unexcelled dining car service. Rates low. Ask agents.

45, July 6.

ITEMS OF INTEREST.

The official trial trip of the battleship Kearsarge will not take place until August, and that of the Kentucky in the month following.

E. G. Crosby & Co. Muskegon, Mich., advertise for sale elsewhere in this issue machinery from the wrecked steamers St. Lawrence and H. A. Tuttle, consisting of engines, boilers, steam steering engines, steam windlasses, etc.

Acting on the advice of the bureau of construction, Secretary of the Navy Long will buy enough Harveyized armor from the Bethlehem and Carnegie companies to equip the monitors Arkansas, Connecticut, Florida and Wyoming, and for diagonal plates for the battleships Maine, Missouri and Ohio.

"This little book has grown to be quite indispensable," says Mr. J. L. Crosthwaite, vessel owner and agent of Buffalo, in referring to the "Little Red book," published by the Marine Review Pub. Co., from which the name and address of owner, captain or engineer of any lake vessel may be determined at a glance.

Mr. James Graham of James Graham & Co., owning coal docks on the Detroit river with a system of pockets for the rapid fueling of steamboats at the foot of Twenty-first street, below the routes of a great number of local passenger boats and car ferries, says that he now has at his dock 700 feet frontage and 23 feet of water. The river is wide at this point, giving plenty of room for tows.

"Summer Sauntering on Northern Waters" is the title of a handsomely illustrated little pamphlet issued by the Lake Michigan & Lake Superior Transportation Co. of Chicago, whose Manitou is famous as one of the most luxurious lake steamers afloat. The booklet describes and illustrates the resorts reached by the steamer, embodies a condensed time schedule and tells something about the vessel itself.

The wonderful endurance of a well designed and thoroughly constructed fan blower is very emphatically evidenced by a recent statement of The William Kennedy & Sons, Ltd., Owen Sound, Can., to this effect: "We have two Sturtevant pressure blowers in use, one of which has run over 32 years steady, and often twenty-four hours a day, and is apparently as good as when installed, although no one has as yet seen the inside of it. The other has been used for foundry purposes, and has been in use for about thirty years or so."

DROP FORGINGS TO ORDER

STANDARD

Wrenches, Hoist Hooks, Sockets, Eye Bolts, Shafting Collars, Machine Handles, Thumb Screws and Nuts, Swivels, &c., &c.

KEYSTONE OPEN LINKS.
Send for Catalogue and Discounts.

1886.



SPECIAL

FORGINGS OF ALL KINDS.

Send Model or Drawing and
Get our Prices.

May Reduce Present Cost.

KEYSTONE DROP FORGE CO., 19th and Clearfield Sts.
PHILADELPHIA, PA.

WRECKERS AIR BAGS.

1,000 tons lift in stock. Low rental or share of salvage. Belting, Hose, Packing, full line of best rubber at factory prices.
MINERALIZED RUBBER CO., N. Y.

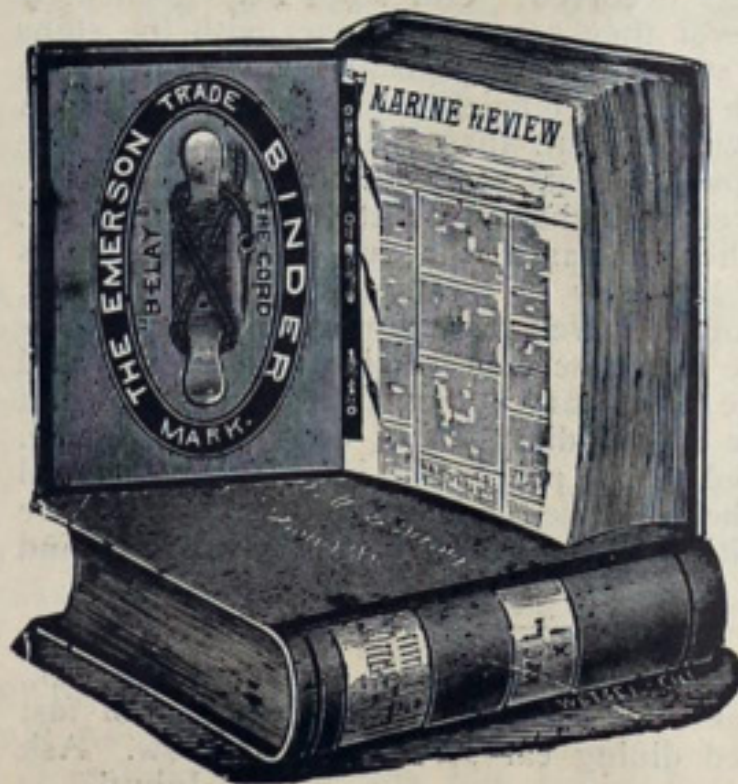
A Rare Opportunity IS OFFERED FOR A Small Summer Steamer

to ply around different points of interest in the vicinity of Marquette, Mich., during tourist season. Every facility will be offered for the establishment of a profitable business

Address W. B. H., Office Marine Review Pub. Co.,

June 15.

Perry-Payne Building, Cleveland.



ONE OF THESE BINDERS

that will hold 52
NUMBERS
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MARINE REVIEW,

Will be mailed to
any address on
receipt of \$1.

MARINE REVIEW...

Perry-Payne Bldg.,
CLEVELAND, O.

METAL POLISHES.

To keep a big passenger steamer clean and bright, free from vermin, dirt and rust, is a task of no small dimensions. In port or during the voyage many pairs of hands are constantly engaged in scrubbing, brushing and polishing. It is imperative that the work be well and thoroughly done both for sanitation and appearance sake. The constantly changing population of the ship leaves germs of disease, and the action of the elements corrode the metal work, and would work serious damage were it not for the vigilance of the cleaners. Keeping the brass railings and other finished metal work brightly polished is in itself an arduous task. To assist in this part of the work hundreds of compounds have been invented. Liquid and paste polishes of many different brands have been placed on the market, each undoubtedly possessing some merit, but during long voyages they are often found wanting—the liquid evaporates and the paste melts when subjected to the heat of the engine room or of the sun of the tropics.

After a long series of experiments, an association of Pittsburg chemists have compounded a dry polish which is said to possess the good features and in which the undesirable ones are eliminated entirely. Ayrolite (the name applied to this polish) will polish any metal that will take a finish, will not damage in any way the finest metal, contains no acids, grease or grit, and will neither evaporate nor melt. For fine metals it is used dry, but when used on brass or other cheaper metals it may be mixed with gasoline, benzine, carbon oil or alcohol. The use of Ayrolite will effect quite a saving, it is claimed, in the expense for cleaning, as a 24-ounce package costs but 40 cents. It is said that a package of this kind will do as much work as a gallon of liquid polish. A sample package will be mailed on receipt of 10 cents by the manufacturers, the Ayrolite Co., 627 Second avenue, Pittsburg.

One dollar Sunday outings—Beginning Sunday, May 28, and until further advised, parties of five or more traveling together on one party ticket going and returning same day, may travel on any train of the Nickel Plate road to and from any station west of Wallace Junction, Pa., not more than one hundred miles from starting point, for \$1 for each person. Where single fare is \$1 or less, individual tickets will be sold going and returning same day at one fare for the round trip. Confer with ticket agents for further particulars.

41, June 31

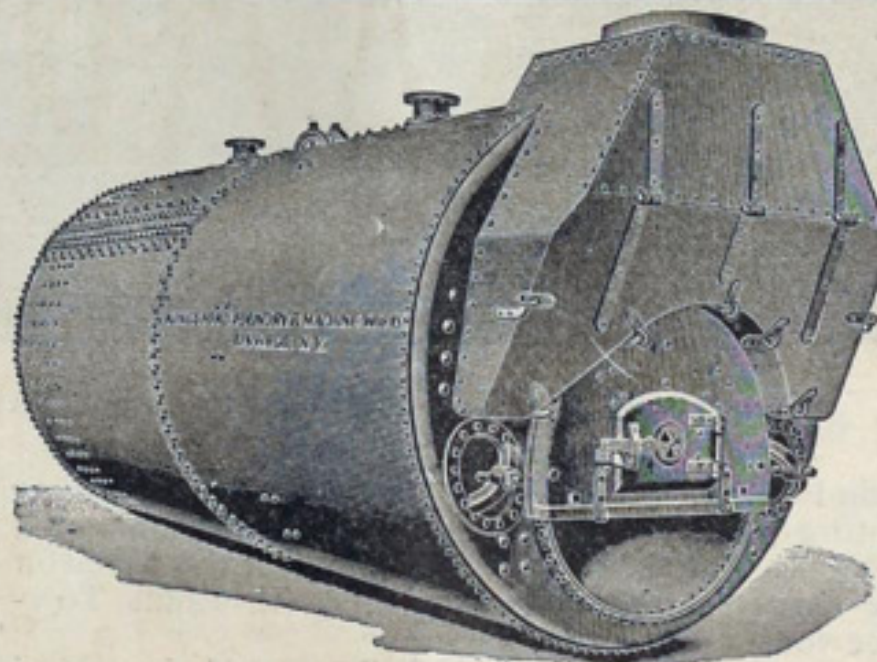
JAMES MCKAY & CO.

Manufacturers of all kinds of

High Grade Boom, Rafting, **IRON CHAINS.**
Toggle, Marine and Swedish



Write for Prices. PITTSBURG PA.



Marine Boilers.

Centrifugal Pumping
Machinery for all
Purposes.

Kingsford Foundry
and Machine Works,
OSWEGO, N. Y.

Treasury Department, Office of General Superintendent U. S. Life-Saving Service, Washington, D. C., June 10, 1899. Sealed proposals will be received at this office until 2 o'clock p. m. of Wednesday the 5th day of July, 1899, for furnishing supplies required for use of the Life-Saving Service for the fiscal year ending June 30, 1900; the supplies to be delivered at such points in New York City, Grand Haven, Mich., and San Francisco, Cal., as may be required, and in the quantities named in the specifications. The supplies needed consist of Beds and Bedding; Blocks and Sheaves; Cordage; Crockery; Furniture; Hardware; Lamps, Lanterns, etc.; Lumber, Medicines, etc.; Paints, Oils, etc.; Ship Chandlery, Stoves, etc.; Tools, and Miscellaneous articles; all of which are enumerated in the specifications attached to the form of bid, etc., which may be obtained upon application to this office, or to the Inspector of Life-Saving Stations, 17 State Street, New York City; Superintendent Eleventh Life-Saving District, Grand Haven, Mich.; and Superintendent Twelfth Life-Saving District, New Appraisers' Stores, San Francisco, Cal. Envelopes containing proposals should be addressed to the "General Superintendent U. S. Life-Saving Service, Washington, D. C.," and marked on the outside "Proposal for Annual Supplies." The right is reserved to reject any or all bids, and to waive defects, if deemed for the interests of the Government. Horace L. Piper, Acting General Superintendent.

June 22.

CLEVELAND TERMINAL & VALLEY RAILROAD COMPANY.
 "B. & O. System."

Invites the attention of the traveling public to their new through service recently inaugurated.

Train No. 9: New fast train leaving Cleveland 3:25 P. M. daily for Pittsburg, Washington, Baltimore, Philadelphia and New York, carrying elegant coaches, Pullman vestibule sleeping cars to Philadelphia and Royal Blue dining car from Washington at 7:00 A. M.

Train No. 5: Night express for Akron, Canton and Chicago, leaves Cleveland daily at 10:00 P. M. with coaches and Pullman vestibule sleeping cars and dining car into Chicago, arriving at 9 o'clock next morning.

Train No. 47: For Akron, Canton and Chicago, leaves daily as heretofore at 6:35 P. M., carrying through coaches and Pullman sleeping car into Chicago, arriving at 7:00 A. M.

Lowest rates to Chicago, viz: First-class, \$8.50; second-class, \$7.00.

OTHER TRAINS ON C. T. & V. R. R.

	Depart.	Arrive.
Valley Junction and way stations.....	7:25 A. M.	6:25 P. M.
Wheeling and Chicago	7:25 A. M.	9:25 P. M.
Akron, Canton and Wheeling.....	3:25 P. M.	10:20 A. M.
Akron, Canton and Marietta.....	11:00 A. M.	2:10 P. M.

City ticket office, No. 241 Superior street.

Depot foot of South Water and Champlain streets.

J. E. GALBRAITH, Traffic Manager.

HOW TO REACH SEASHORE, MOUNTAIN AND LAKE RESORTS

The Pennsylvania lines extend direct to places of summer sojourn along the Atlantic ocean. Atlantic City, Cape May, Asbury Park, Long Branch and resorts on the New Jersey coast are seashore terminals of the Pennsylvania system. Newport, Narragansett and summer havens in New England are reached over the Pennsylvania route via New York. The Adirondacks, White Mountains, Catskills and mountain retreats of the east are also reached through New York. Resorts in the Alleghenies are located upon the Pennsylvania route and may be reached via Pittsburgh without changing cars. The Pennsylvania lines also lead to resorts in Michigan and the lake region through three gateways—Cleveland, Toledo and Fort Wayne. Full information about rates, through time of trains and the convenient manner in which summer resorts may be reached will be cheerfully furnished upon application to local passenger and ticket agents of the Pennsylvania lines, or by addressing

C. L. KIMBALL, A. G. P. Agt., Cleveland, O.

The steamer Havana, recently completed by the Cramps for the Ward line, has just broken all records between Havana and New York. Her time from Morro castle to Sandy Hook lightship was 2 days, 15 hours and 50 minutes. The best day's run was 454 knots.

Proposals for repairing the government piers at Ludington, Mich., will be received until June 27 by Capt. Chester Harding, United States engineer, whose address is 57 Park street, Grand Rapids, Mich.

A SPECIALTY:

TOWING
AND
SHIPS'
HAWSERS
LINES

ROPE

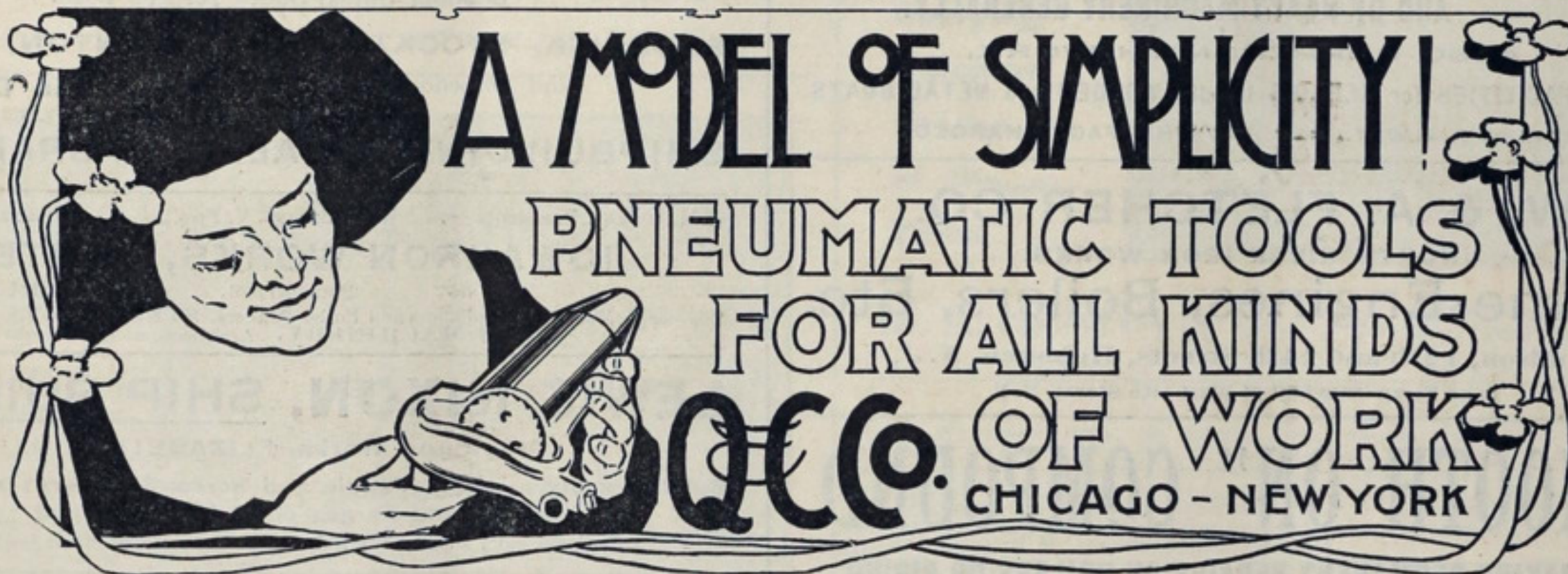
THE AMERICAN MANUFACTURING CO.

67 WALL STREET, NEW YORK.

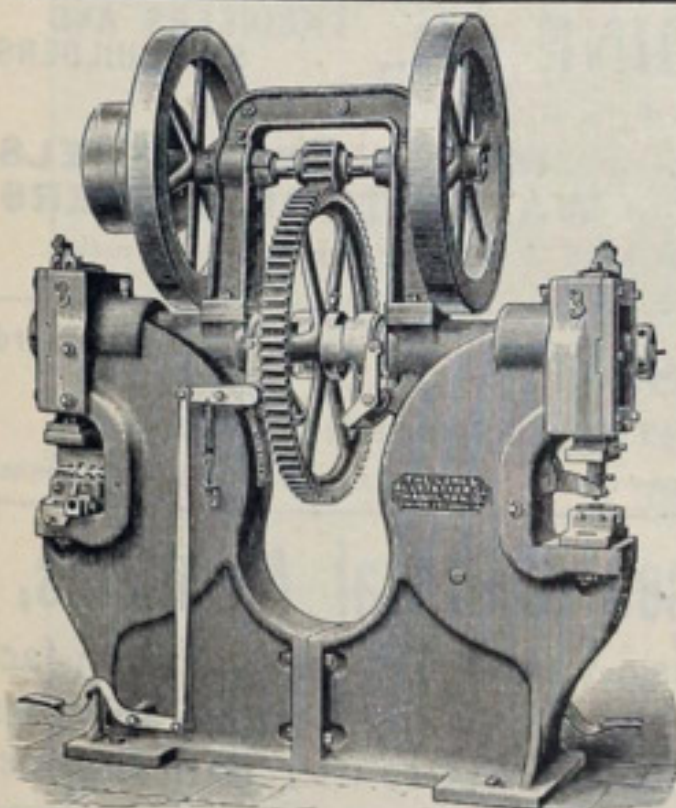
THE LARGEST MANUFACTURERS OF FIBER IN THE WORLD.

A SPECIALTY:

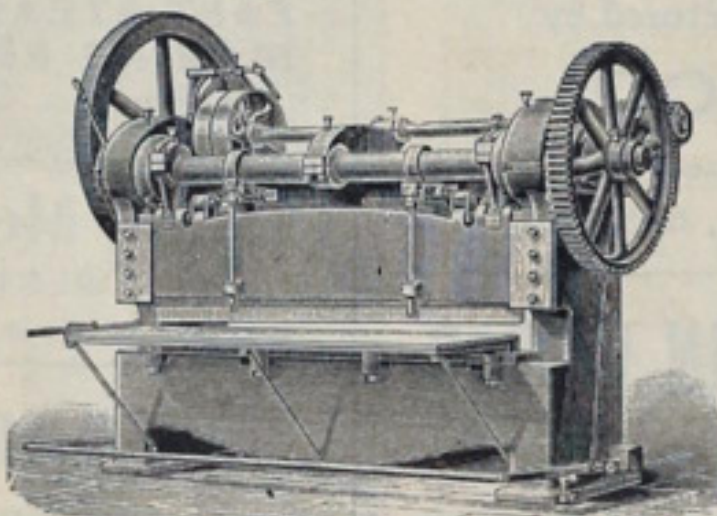
4-STRAND
PLUMBAGO
HEART
HOISTING
ROPE
FOR
CARGO FALLS



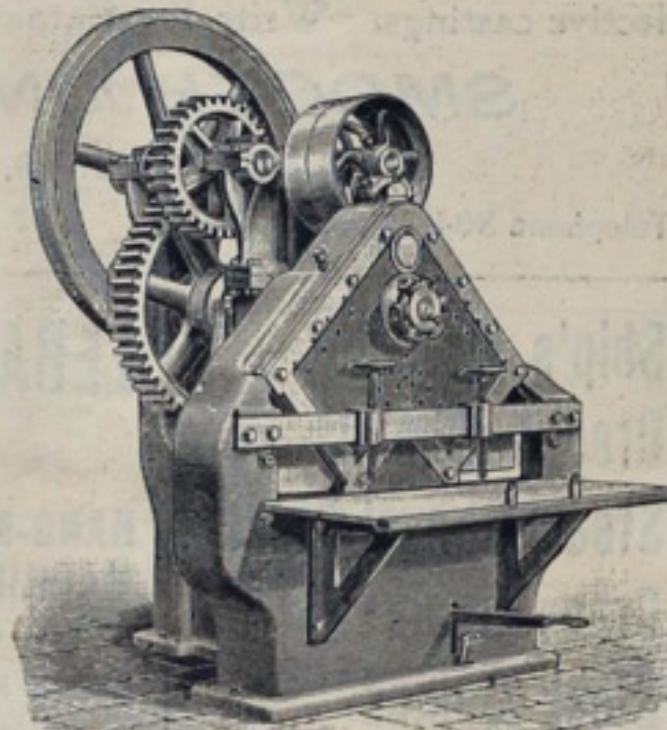
Punching and Shearing Machinery...



Of
All
Kinds
and
Sizes.



Belt,
Steam
or
Electric
Driven.



FOR SHIP YARDS, BOILER SHOPS, Etc.

MANUFACTURED BY

THE LONG & ALLSTATTER CO., HAMILTON, OHIO.

ROACH'S SHIP YARD.



DELAWARE RIVER
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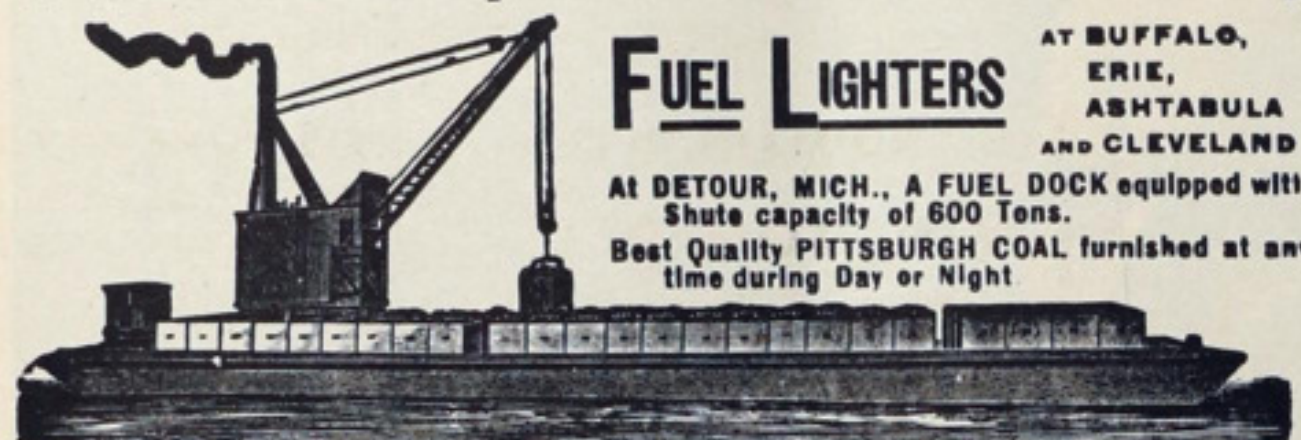
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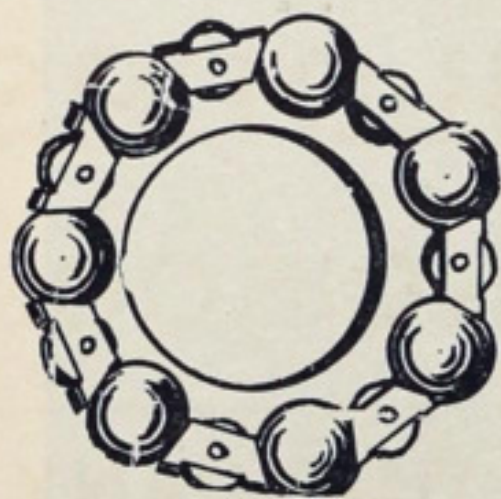
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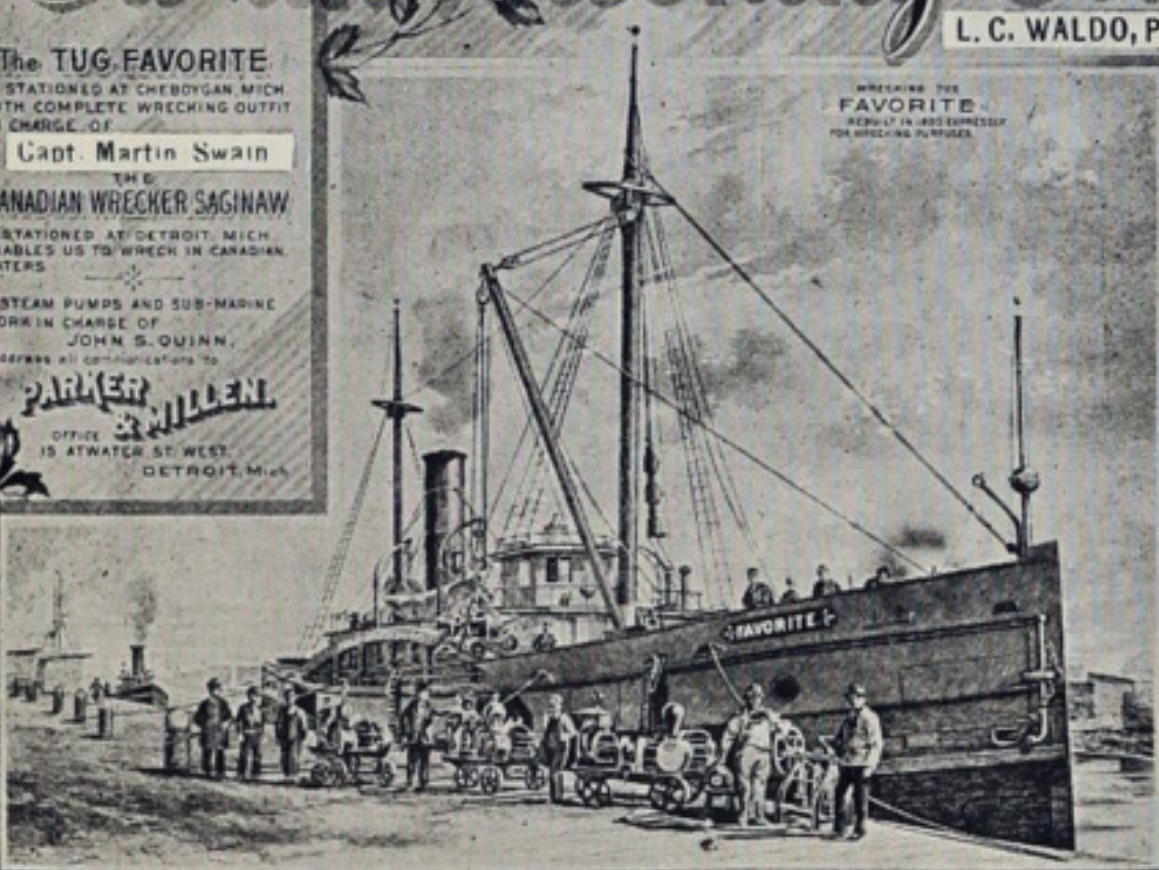
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3-12 INCH ROTARY.
1-14 INCH WORTHINGTON.DIVING RIGS
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DIVERS
ABOARD
ALL TIMES

1899 June 1899						
SUN.	MON.	TUE.	WED.	THU.	FRI.	SAT.
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	..

10-100 TON JACKS
1-12 INCH HAWSER
1-10
1-9Capt. MARTIN SWAIN,
CHEBOYGAN,
MICH.TELEGRAPH
PARKER & MILLEN,
DETROIT, MICH.

U. S. Engineer Office, 185 Euclid Ave., Cleveland, O., May 31, 1899. Sealed proposals for dredging in Straight Channel through Maumee River and Bay, and for Constructing Dike between Turn-out Channels, Toledo harbor, Ohio, will be received here until two o'clock, P. M., standard time, Friday, June 30, 1899, and then publicly opened. Information furnished on application. Jared A. Smith, Col., Engr's. June 29.

U. S. Engineer Office, Morgan Building, Buffalo, N. Y., May 25, 1899. Sealed proposals for harbor excavation at Erie, Pa., will be received here until eleven o'clock A. M. June 26, 1899, and then opened. Information furnished on application. T. W. Symons, Major, Engr's. June 22.

PROPOSALS FOR CONSTRUCTION OF FLAT BOATS.—U. S. ENGINEER OFFICE, Custom House, St. Louis, Mo., May 23, 1899. Sealed proposals for construction and delivery of sixty flat boats will be received here until 12 o'clock, noon, June 22, 1899, and then publicly opened. Information furnished on application. Edw. Burr, Captain, Engrs. June 15.

U. S. Engineer Office, Duluth, Minn., June 1, 1899. Sealed proposals for building pile and timber revetments for Ship Canals across Keweenaw Point, Mich., will be received here until noon, July 1, 1899, and then publicly opened. Information furnished on application here, or, at branch office Houghton, Mich. Clinton B. Sears, Major, Engrs. June 22.

U. S. Engineer Office, 57 Park St., Grand Rapids, Mich., June 12, 1899. Sealed proposals for Repairing Government Piers at Ludington, Mich., will be received here until 3 p. m. June 27, 1899, and then publicly opened. Information furnished on application. Chester Harding, Capt., Engrs. June 22.

U. S. Engineer Office, New Orleans, La., May 30, 1899. Sealed proposals for furnishing steel or iron Tug-boat about 90 feet long, with compound engines, will be received here until 11 a. m. June 30, 1899. Information furnished on application. Geo. McC. Derby, Major, Engrs. June 22.

U. S. Engineer Office, Duluth, Minn., June 6, 1899. Sealed proposals for building extension to breakwater at Presque Isle Point, Marquette, Mich., will be received here until noon, July 6, 1899, and then publicly opened. Information furnished on application. Clinton B. Sears, Major, Engrs. June 29.

U. S. Engineer Office, 57 Park St., Grand Rapids, Mich., June 8, 1899. Sealed proposals for Removal of part of Wreck of Steamer Horace A. Tuttle at Michigan City Harbor, Ind., will be received here until 3 p. m. July 8, 1899, and then publicly opened. Information furnished on application. Chester Harding, Capt., Engrs. June 29.

U. S. Engineer Office, 57 Park St., Grand Rapids, Mich., June 8, 1899. Sealed proposals for Crib work and Repairs to Government Piers at South Haven, Mich., will be received here until 3 p. m. June 23, 1899, and then publicly opened. Information furnished on application. Chester Harding, Capt., Engrs. June 15.

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